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Attorneys for Plaintiff,  
HEXCEL CORPORATION, Reorganized Debtor

IN THE UNITED STATES BANKRUPTCY COURT  
FOR THE NORTHERN DISTRICT OF CALIFORNIA  
OAKLAND DIVISION

In re:

HEXCEL CORPORATION, a Delaware  
corporation,  
  
Reorganized Debtor.

Case No. 93-48535 T

Chapter 11

HEXCEL CORPORATION, a Delaware  
corporation,

Plaintiff,

vs.

NEW JERSEY DEPARTMENT OF  
ENVIRONMENTAL PROTECTION,  
UNITED STATES ENVIRONMENTAL  
PROTECTION AGENCY,

Defendants.

A.P. No. 04-4246

Date: February 17, 2005

Time: 2:00 p.m.

Place: 1300 Clay Street  
Courtroom No. 201  
Oakland, CA

Judge: Hon. Leslie Tchaikovsky

DECLARATION OF COUNSEL

I, Steven L. Leifer, make the following Declaration under the provisions of 28 U.S.C. § 1746:

1. I am an attorney at the law firm of Baker Botts LLP. I represent Plaintiff Hexcel Corporation in the above-captioned matter. I am admitted to the Court *pro hac vice* in this case.

2. Pursuant to Fed.R.Civ.P. 56, I submit this declaration in support of Hexcel Corporation's Opposition to the New Jersey Department of Environmental Protection's Motion for Summary Judgment in the above-captioned matter.

3. I attach to this declaration true and accurate copies of the following documents in support of Hexcel Corporation's Opposition to the New Jersey Department of Environmental Protection's Motion for Summary Judgment:

Exhibit A: A letter from the New Jersey Department of Environmental Protection to William H. Hyatt, dated July 28, 2004.

Exhibit B: A November 1999 "Remedial Action Workplan Addendum, Hexcel Facility, Lodi, New Jersey" drafted by Haley & Aldrich, Inc. for Hexcel Corporation, and submitted to NJDEP (attached without appendices).

Exhibit C: A letter "Report on Sediment and Surface Water Sampling Program" dated October 8, 2003 from Haley & Aldrich to Joseph J. Nowak of the New Jersey Department of Environmental Protection (attached without tables, figures or appendices).

4. I hereby certify under penalty of perjury that the foregoing disclosures made by me are true. I am aware that if the foregoing disclosures are willfully false, I am subject to punishment.

Dated: January 18, 2005

  
Steven L. Leifer



## State of New Jersey

Department of Environmental Protection

PO Box 402

Trenton, NJ 08625-0402

July 28, 2004

James E. McGreevey  
GovernorBradley M. Campbell  
Commissioner  
Tel. # (609) 292-2885  
Fax # (609) 292-7693Mr. William H. Hyatt, Jr.  
Kirkpatrick & Lockhart, LLP  
The Legal Center  
One Riverfront Plaza, 7<sup>th</sup> Floor  
Newark, NJ 07102-5497

Dear Mr. Hyatt:

I am writing to you again in your role as counsel for the Lower Passaic Study Area Cooperating Parties Group ("the Group"), in response to your June 16, 2004 letter on behalf of the members of the group who received Directive Number 2003-1 (the Directive).

Your letter rejects our proposed compromise terms for the Group to achieve compliance with the Directive, as proposed by our counsel, while offering no alternative or substitute terms for establishing compliance. To date, none of the Group has documented any actions that could be remotely construed to establish substantial or even partial compliance with the Directive. As you are aware, while this noncompliance with the Directive persists, each of the Group Directive recipients is subject to treble damage for funds expended to meet the requirements of the Directive.

In this light, it is difficult to take at face value either your assertion that the Group Directive recipients seek to avoid litigation or your assertion that the Group directive recipients are willing to pursue early restoration measures. The former assertion is belied by the absence of any substantive counterproposal to achieve compliance, leaving to the Department and the Attorney General no alternative to litigation. The latter assertion is belied by the absence of any concrete proposal concerning early restoration beyond the proposed completion of an existing master plan, most of which already has been funded and completed.

As a final effort toward settlement before proceeding to expend additional public funds (with concomitant treble damage liability for the Group directive recipients), I would propose the following as a compromise basis for achieving compliance with the Directive.

- A. The Group Directive recipients would agree to complete a comprehensive natural resource damage assessment and restoration plan within 24 months of the date of this compliance agreement. The Group directive recipients would agree to fully complete

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an allocation process among the relevant parties in the same time frame. This responds to your concerns about a realistic assessment and allocation schedule.

- B. The Group Directive recipients would agree, pending comprehensive damage assessment (the Assessment Phase), to fund a \$100 million Passaic River interim restoration fund over four years. Upon completion of a comprehensive damage assessment, the scope of natural resource damage liability and the funding contributions required to maintain compliance with the directive shall be reopened. This responds to the asserted willingness of the parties to fund early restoration actions.
- C. There would be a preliminary assumption of an orphan/public entity share of twenty percent (20%). The Department would be responsible for seeking recovery or performance commitments from public sector entities or forgoing those recoveries entirely. Thus, the actual commitment by the Group Directive recipients would be \$80 million during the four-year Assessment Phase. The orphan and public entity share would be subject to revision upon completion of a final allocation. This responds to your stated concerns about public entity liability.
- D. During the Assessment Phase, the Group Directive recipients would agree not to commence litigation against any public entities. DEP would agree to consider issuance of additional directives to those potentially liable parties that the Group Directive recipients identify for the Department, to the extent that the Group Directive recipients provide a factual and legal basis for liability.
- E. For purposes of the restoration fund contributions during the Assessment Phase, there would be an allocation to the category of known dioxin dischargers of 75 percent. Liability within each category otherwise would be presumed to be per capita. These relative shares also would be subject to revision upon completion of a final allocation.
- F. The Department would conduct a public planning process for interim restoration projects funded through the restoration fund. Upon completion of a final restoration plan, the Department will conduct a further public process. At each phase, the Department will include federal natural resource trustees, and shall so conduct the process to ensure that the legal and policy requirements of these respective trustees are met.
- G. The two years between completion of the restoration plan and final payments to the interim fund would be dedicated to final settlement negotiations, during which time all parties would agree not to commence litigation.

In considering this proposal, the Group directive recipients should consider two issues.

First, the Department already has identified \$50 million in funding that could be devoted to damage assessment and interim restoration actions during the assessment phase. These and additional funds identified and expended by the Department for meeting the

performance obligations of the Directive will be the basis for treble damage liability against noncompliant Directive recipients.

Second, to the extent any individual directive recipient is willing to accept this proposal as a basis for compliance, the Department will be willing to establish interim compliance for that recipient. Thus, if one or more of the non-dioxin parties would be willing to pay its per-capita share of the \$20 million non-dioxin interim share over four years, the party or parties can avoid the threat of treble-damage liability. To the extent one or more parties comply, the funds subject to trebling will increase accordingly.

I believe this proposal responds directly to concerns raised by the directive recipients, demonstrates substantial good-faith efforts by the Department to avoid litigation, and honors the stated willingness of many of the Directive recipients to accelerate restoration. This proposal also provides a practical basis for individual compliance if the barriers to collective compliance by the Group prove insurmountable.

Please advise me at your earliest convenience whether the Group is prepared to come into compliance on this basis.

Cheers,

  
Bradley M. Campbell  
Commissioner

c: The Honorable Peter Harvey

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**REMEDIAL ACTION WORKPLAN ADDENDUM  
HEXCEL FACILITY, LODI, NEW JERSEY**

**by**

**Haley & Aldrich, Inc.  
Dover, New Jersey**

**for**

**Hexcel Corporation**

**File No. 74167-017  
November 1999**

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## 1.0 EXECUTIVE SUMMARY

This Remedial Action Workplan Addendum (RAWA) is provided for the Hexcel Facility (the site) located at 205 Main Street, Borough of Lodi, Bergen County, New Jersey, which is the subject of an investigation under the Industrial Site Recovery Act (ISRA). Based on the results of the soil and groundwater investigation activities undertaken over the past ten years, results from various pilot tests conducted at the site, and the evaluation of the available remedial technologies, a conceptual remediation plan was developed for the site and presented to the New Jersey Department of Environmental Protection in May 1999. This RAWA summarizes the results from soil and groundwater investigation activities and is submitted to present the details of the remediation plan for the site.

The soil and groundwater contamination at the site is primarily associated with the presence of Dense and Light Non-Aqueous Phase Liquids (DNAPLs and LNAPLs). The contaminants of concern are mainly Volatile Organic Compounds (VOCs) and Polychlorinated Biphenyls (PCBs). Due to the nature of the contamination and the success of a pilot test, 2-Phase Extraction Technology was selected as the most viable remedial technology for the site because it is capable of remediating both soil and groundwater media simultaneously. In addition, removal and disposal of shallow soils contaminated with PCBs is proposed to eliminate surface exposure to PCBs. The RAWA provides details on the 2-Phase Extraction technology, provides preliminary design for the site-specific application of the technology, presents the remediation plans for PCBs, and summarizes other minor Areas of Concern (AOCs) at the property.

The remediation plan for the site has been developed to accomplish the site-specific remediation goals, namely, i) removal of free product (DNAPL and LNAPL) in the shallow overburden formation, ii) no adverse effect on Saddle River, iii) no increasing trends of contaminants in the lower overburden formation, iv) elimination of surface exposure to PCBs, and v) elimination of mobile PCBs. The success of the 2-Phase Extraction technology and other remediation activities will be evaluated against these performance objectives.

In addition to the primary AOC related to the presence of DNAPL and LNAPL source areas, we have presented several other outstanding issues as additional AOCs in this RAWA. Additional investigation/remediation activities have been proposed to resolve these outstanding issues. These additional investigation/remediation activities have been represented as AOCs in this RAWA in order to provide a complete overview of the plan for the site.

## 2.0 INTRODUCTION

This Remedial Action Workplan Addendum (RAWA) is provided for the Hexcel Facility ("the site") located at 205 Main Street, Borough of Lodi, Bergen County, New Jersey, which is the subject of an investigation under the Industrial Site Recovery Act (ISRA). Figure 1 and Figure 2 are the Site Location Map and the Site Plan, respectively. The RAWA supplements the various submissions to the New Jersey Department of Environmental Protection (NJDEP) which are discussed later.

The site is located in a historically industrial area with the presence of manufacturing facilities dating back to the 1800s. The site was part of the historic United Piece Dye Works and has been operated as a chemical manufacturing facility since the early 1900s under various ownerships. Most recently, the site was operated by Fine Organics Corporation (Fine Organics) which ceased operations in September 1998. This RAWA is provided on behalf of Hexcel Corporation (Hexcel), the current owner of the property. Demolition activities were conducted following cessation of operations by Fine Organics. All the buildings at the site except for a warehouse, were demolished in early 1999.

The soil and groundwater investigations to date have indicated contamination related to the presence of chlorinated solvents and Polychlorinated Biphenyls (PCBs). Non-Aqueous Phase Liquids (NAPLs) have been detected and recovered from a number of wells on the site. Although both Dense (DNAPLs) and Light (LNAPLs) non-aqueous phase liquids are present, presence of DNAPLs has been more persistent and widespread than LNAPL. Similarly, although dissolved concentrations of LNAPL-related compounds (benzene, toluene, xylenes) have been detected in groundwater and in soil, the majority of the contamination is related to the presence of chlorinated solvents. PCBs appear to be associated primarily with the DNAPLs with the exception of an area of surficial contamination. Due to the complexity of the nature of DNAPLs, potential of PCB migration with DNAPLs, and the majority of soil and groundwater contamination relating to the DNAPLs, the focus of the remediation strategy will be the remediation of DNAPLs. The remediation strategy, which will focus on LNAPL and DNAPL source removal, will address and treat soil and groundwater contamination areas as well.

The investigations at the site were initiated in response to the requirements of the Environmental Cleanup Responsibility Act (ECRA; now referred to as ISRA), which became applicable on 31 December 1985 when Hexcel Corporation (Hexcel) entered into a Purchase Agreement to transfer ownership of its facility located in Lodi, New Jersey to Fine Organics. In accordance with the ECRA requirements, a *General Information Submission (GIS)* and a *Site Evaluation Submission (SES)* dated 7 January 1986 were submitted to the New Jersey Department of Environmental Protection (NJDEP). Initial soil investigations, pre-dating the trigger of ECRA at the site, occurred in June 1984 to identify the extent of contamination from two leaking underground storage tanks. Further soil investigations were performed in June and August 1985 to identify potential areas of environmental concern and an ECRA sampling plan was submitted in April 1986 to address these areas. The NJDEP approved the plan in December 1987 and the investigation plan was implemented in 1988.

The results of the NJDEP-approved sampling plan were submitted in two parts. A report titled "*Presentation of ECRA Sampling Results for Hexcel Corporation*" was submitted in December 1988. Following submission of the report, additional sampling was conducted during December 1988 and January 1989. The results for additional investigations were submitted in March 1989 in a report titled "*Remediation Plan for the Former Hexcel Industrial Chemicals Group, Lodi Facility*". The NJDEP granted conditional cleanup plan approval in July of 1990.

During the Spring of 1991, a Groundwater Recovery and Treatment System was installed, as proposed in the March 1989 Remediation Plan. The system was operated on a batch

treatment basis during the period of testing of the system and procurement of various permits including the Sewer Use Permit for the Passaic Valley Sewerage Commissioners (PVSC).

Hexcel submitted a report titled "*Summary of Soil Investigation and Conceptual Cleanup Plan Proposal*" to NJDEP in January 1993 presenting alternatives for cleanup of contaminated soil on the site. Although the above-mentioned report did not discuss groundwater contamination, the expected groundwater remediation plan for the site was the operation of the groundwater recovery and treatment system at full capacity upon approval of the necessary permits.

The submission of the soil cleanup plan was followed by a period of financial instability for Hexcel. At the time when Hexcel was recovering from its financial problems, there appeared to be an opportunity for remediation of the site within the regional framework in conjunction with the proposed plans for redevelopment of the general area by the Borough of Lodi. Additionally, Hexcel was pursuing to purchase the property back from Fine Organics, which would render the site accessible for an aggressive remediation approach.

During the 1990s, Hexcel continued to implement interim remedial measures including free product recovery, and collection and treatment of groundwater entering the basement. Additional tasks, including pilot test for the groundwater recovery system and investigation of barrier wall option as a remediation strategy, were conducted during this period. A pilot test was performed in the Fall of 1996 to evaluate the groundwater recovery system. Data collected from the recovery system pilot test indicated that the current recovery well configuration and equipment would be unable to obtain hydraulic control of the groundwater. Furthermore, the limitations of the recovery system and low well yields would make it ineffective to add more recovery wells to the current system. The details of the pilot test for the existing recovery system at Hexcel was provided in a February 1997 Report "*Modifications to the Ground Water Remediation Plan (March 1, 1989) for the Former Hexcel Facility, Lodi, New Jersey*". Hexcel also submitted reports titled "*Summary of Historical Soil Data*" and "*Summary of Historical Groundwater Data*" to the NJDEP in July 1997.

In 1998, it became evident that although the focus of remediation at the site would be to render the site ready for the future use of the property, the regional remediation and the related development concept and approach were not in the near term viable. Therefore, with the anticipated departure of Fine Organics from the property in Fall 1998, Hexcel undertook a comprehensive evaluation of all remedial technologies including all conventional and innovative approaches. All options were evaluated for their effectiveness in remediating the specific media and limitations of application. Based on the comprehensive review, 2-Phase Extraction was selected as the most viable remedial technology for the site-specific conditions. 2-Phase Extraction technology is one of the few remedial technologies which are capable of remediating both the soil and groundwater media simultaneously. A pilot test performed in Fall 1998 demonstrated the effectiveness of the 2-Phase Extraction Technology.

Hexcel undertook demolition activities in Winter 1998 subsequent to Fine Organics vacating the property. All the buildings at the site, except for a warehouse, were demolished rendering the site accessible for remediation. The demolition activities were completed in Spring 1999.

Hexcel met with the NJDEP on 20 May 1999 to present the conceptual remediation plan for the site. This Remediation Action Workplan Addendum (RAWA) is submitted to present the details of the remediation plan discussed at the meeting. The RAWA will discuss the physical and hydrogeological setting of the site, summarize the current soil and groundwater conditions, and provide the support for the remedial action selection. The RAWA will provide details on the 2-Phase Extraction technology and provide preliminary design for the site-specific application of the technology. Technology capabilities and limitations will be discussed in addition to the technology performance monitoring criteria and site-specific

cleanup objectives. The RAWA will provide an estimated schedule of remedial activities and associated costs.

### 3.0 PHYSICAL SETTING

The site is approximately a 2-acre parcel located at 205 Main Street in Lodi, Bergen County, New Jersey (refer to Figure 1 for Site Location Map). The Hexcel site is located in a historically industrial area with the presence of manufacturing facilities dating back to the 1800s. The site was part of the historic United Piece Dye Works (UPDW) and has been operated as a chemical manufacturing facility since the early 1900s under various ownerships. Most recently, the site was operated by Fine Organics Corporation which ceased operations in September 1998.

The site is bounded by Main Street to its east, Saddle River to its west, Molnar Road to its south, and the Route 46 ramp to its north. There are some retail businesses and residences across Main Street. Napp Technologies, Inc. (Napp), the site of a fatal explosion and fire in 1995, is situated across Molnar Road. Currently, the Napp site is the subject of an environmental investigation being conducted pursuant to ISRA.

Hexcel undertook demolition activities in late 1998, which were completed in Spring 1999. All the buildings at the site have been razed, with floor slabs left in place. The only remaining building is the warehouse, which has been left intact to house some of the remediation system components. With the cessation of an operating facility and the demolition of the buildings, the site has been rendered accessible for remediation (Figure 3: Post-Demolition Photos).

The site is located adjacent to the east bank of the Saddle River. At present, the NJDEP has designated the Saddle River as an FW-2 stream, which is a general surface water classification for the waters of the State of New Jersey. This classification denotes that it is not used presently for potable water.

### 4.0 HYDROGEOLOGICAL SETTING

The site is mapped in the Passaic Formation. The geology above the bedrock is characterized by the fluvial deposits of the Saddle River and man-emplaced fill materials. The subsurface at the site consists of a shallow (or upper overburden) formation, a deep (or lower overburden) formation and a confining layer which separates these two formations. The simplified figure (Figure 4) below illustrates the general geological cross-section at the site:

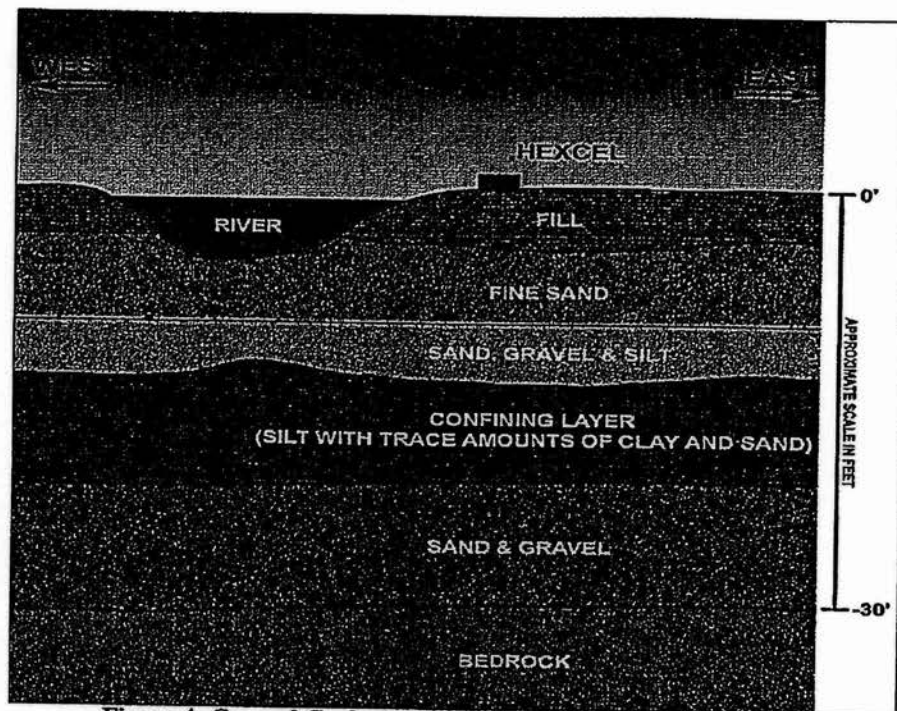


Figure 4: General Geologic Cross-Section at the Hexcel Facility

The subsurface information has been developed from installation of wells and borings at the site. The description and hydrological characteristics of each of the layers is provided in the following sub-sections. Appendix A provides the report<sup>1</sup> for the hydrological testing of the soil samples.

**Shallow Formation:** The evaluation of the boring logs indicates that the upper subsurface formation consists mainly of fill and fluvial deposits. The uppermost layer of the subsurface is fill consisting of sand, gravel, small boulders, organic matter and cinders. The fill ranges in thickness from 4 feet to 10 feet over the site. Underlying the fill is a formation characteristic of natural fluvial deposits. The fluvial deposits at the site have two distinct layers. The top layer, immediately under the fill, consists of a fine sand. The tested average unit weight of this uniform sand is 100 pcf and the average porosity is 0.46. The tested permeability of this layer is  $10^{-3}$  cm/sec. The layer underlying the fine sand consists of gravel, sand and silt. The amount of silt, sand and gravel in this bottom layer of fluvial deposits varies over the site. Due to the presence of a wide range of particles in this layer, the average porosity of this layer, at 0.32, is lower than the fine sand layer above it. Consequently, the permeability of this layer is also expected to be lower than that of the fine sand layer. The tested average unit weight of the bottom layer of the fluvial deposits is 126 pcf.

The depth to the water table (groundwater in the shallow formation) is typically 3 to 7 feet from the ground surface. Due to the shallow depth of the water table, the groundwater saturates the fluvial deposits and portions of the fill across the entire site. Based on the

<sup>1</sup> The values for hydrological parameters, including unit weight, grain-size analyses, porosity, and permeability, are based on laboratory tests performed by Geotechnical Laboratory of Woodward-Clyde for soil sample cores collected and tested in December 1995.

current subsurface information, the Saddle River channel appears to be in hydraulic connection with the fluvial deposits.

In the shallow formation, the general direction of the groundwater flow is from the east to the west toward the Saddle River. The groundwater elevation contours for water levels collected in July 1999 are provided in Figure 5. The contours indicate the presence of a groundwater mound in the vicinity of the former Building 2. This mound indicates a locally altered groundwater flow direction, as indicated in Figure 5. While the facility was in operation, the possibility of leaking water pipes was believed to be the cause for the mound. It is possible that a concrete structure, which is known to exist under the former Building 2, is the cause for the mound since the mound has not dissipated following water utility shut-off to the site.

**Confining Layer:** Underlying the fill and fluvial deposits is a layer of fine-grained sediments which form the confining layer. Grain-size analyses of this layer indicates that these sediments are mainly silt with trace amounts of sand and clay. The unit weight of this layer is 132 pcf and porosity is 0.34. The tested average permeability of this material is  $4.5 \times 10^{-6}$  cm/sec. This permeability value is consistent with the published range of permeability for silt and indicates that this formation restricts groundwater flow. The depth to the confining layer from ground surface has been found to range from 7 feet to 16 feet over the site and the thickness of the layer varies from 4 feet to 15 feet. The confining layer is known to exist from the western property boundary (along the Saddle River) and extends eastward towards Main Street. The subsurface investigations indicate that the confining layer is thinner and more silty in the vicinity of the Main Street, compared to the other areas of the site.

**Deep Formation:** Sediments of the deep formation beneath the confining layer are composed of sand and gravel deposited by glacial processes. This deposit is characteristic of glacial outwash deposits in which coarse sediments are laid down by debris-laden streams formed from meltwater of glaciers. This formation appears to extend down to the bedrock. The range of depth to the bedrock at the site is 25 to 30 feet from the ground surface. Although analyses have not been conducted to evaluate the hydrological parameters of the deep formation, the porosity and permeability of the formation are expected to be higher than that of the shallow formation based on the soil composition. In the deep formation, the potential direction of groundwater flow is from the northeast to the southwest. Figure 6 provides the groundwater contours generated for the water level data collected in July 1999 for the eight deep wells on site.

## 5.0 SUMMARY OF INVESTIGATIONS

The investigation activities at the site have been going on since 1984 to evaluate the soil and groundwater conditions at the site and for the purposes of developing remedial strategy for the site. This section briefly summarizes the soil and groundwater investigation activities conducted to date; the details on the investigations were provided in the previous submissions to the NJDEP.

### 5.1 Soil Investigations

Soil conditions at the site have been extensively investigated with samples collected between June 1984 and August 1999. Initial soil investigations occurred in June 1984 to identify the extent of contamination from two underground storage tanks (USTs). Subsequent soil sampling was performed at the site to identify areas of environmental concern and the extent of soil contamination. Soil sampling conducted at the site consists of soil samples from 138 borings, post-excavation samples for USTs, and surface samples for PCB delineation. Of the 138 borings, 110 borings and the UST excavations were conducted between 1984 and 1992; detailed results from these investigations were provided in earlier submissions to the NJDEP and most recently summarized in the "Summary of Historical Soil Data" report submitted to the NJDEP in July 1997. Since then, 30 borings were installed in October 1998 to obtain further information on PCBs for remedial planning purposes. Additionally, soil samples were

collected from 7 hand-auger borings and 16 Geoprobe borings in June and August 1999 to delineate an area with elevated levels of PCBs on the surface. Table 1 lists all the soil samples, including depths and tested parameters, collected at the site for evaluation of soil conditions.

## 5.2 Groundwater Investigations

Groundwater investigations at the site have included testing of wells for groundwater quality and monitoring for free product presence in the wells. Hexcel has been performing an approved groundwater elevation/product monitoring program on a weekly, monthly, and quarterly basis as part of the interim remedial measure for the site. Apart from monitoring of wells for free product (LNAPL and DNAPL) on a regular schedule, Hexcel has conducted groundwater sampling for chemical analyses to evaluate the dissolved concentrations in groundwater. The most recent round of groundwater sampling at the site was conducted in August 1998. The details on the three different series of wells (monitor, recovery, and control wells) installed at the site were provided in the July 1997 "Summary of Historical Groundwater Data". Table II summarizes the groundwater sampling conducted at the site.

## 6.0 INVESTIGATION RESULTS

The results from both soil and groundwater investigations are discussed together and categorized based on specific parameter, to develop the Areas of Concern (AOCs) for the site. Most of these results have been provided to the NJDEP in previous submissions, and were recently summarized in the above-referenced July 1997 reports on soil and groundwater data. This RAWA summarizes the historical data including the more recent data from soil sampling conducted for PCBs in 1998 and 1999 and the groundwater sampling data from 1998. The results are categorized for the parameters of concern, namely, i) Volatile Organic Compounds (VOCs); ii) Base/Neutral and Acid Extractable Compounds (BNAs); iii) Polychlorinated Biphenyls (PCBs); and iv) Priority Pollutant Metals (PPMs). Section 6.5 provides a technical overview of the soil and groundwater data.

### 6.1 Volatile Organic Compounds (VOCs)

A review of the volatile organic testing conducted at the site indicates the presence of contamination in the soil and groundwater associated primarily with the presence of DNAPL (chlorinated solvents) source areas, and LNAPL (fuel oil and gasoline) source areas to a lesser degree. The presence of volatile organic compounds in the soil is limited to the areas of former underground and aboveground storage tanks, as shown in Figure 7. For boring locations where samples have been taken at various depths, the general trend is an increase in concentration with increase in depth from the ground surface within the shallow formation, as would be expected from a DNAPL-related contamination. Table III provides the results for soil samples exceeding the Impact to Ground Water Soil Cleanup Criteria (IGWSCC), the most stringent cleanup criteria for volatile organic parameters. Figure 7 provides the soil sample locations tested for VOCs; samples were collected at more than one depth at most locations.

The groundwater monitoring results show that the dissolved concentrations of VOCs have been delineated for the purposes of the implementation of the remedial action at the site. Table IV provides the results for volatile organic testing over time for the shallow wells and Table V provides the results for the deep wells. Figure 2, Site Plan shows the monitor well locations.

Due to the nature of DNAPL contamination, 2-Phase Extraction was selected as the most viable remedial technology for the site because of its capability in treating NAPLs, contaminated soil, and groundwater in an area. The areas identified as soil contamination areas (Figure 7) will be treated using the 2-Phase Extraction process, together with the other DNAPL-source areas identified at the site from groundwater/product monitoring. Section 10

provides details on the 2-Phase Extraction technology and its site-specific application for Hexcel.

## 6.2 Polychlorinated Biphenyls (PCBs)

PCBs at the site are associated both with LNAPL and DNAPL and have been detected in soil and groundwater samples collected at the site. The PCBs in the soil have been delineated. A comprehensive investigation was undertaken in 1998 and 1999 to delineate i) the PCBs in soils associated with the presence of DNAPLs, and ii) PCBs on the surface in an area close to the former Boiler Room. The soil sampling results were reviewed in conjunction with the current PCB remediation policy (40 CFR 761.61) which allows for levels up to 100 ppm to be left on-site with the appropriate engineering and institutional controls. As of 1 November 1998, the Site Remediation Program is accepting 100 ppm as the soil removal criteria for PCBs (*Site Remediation News, December 1998, Vol. 10 No 2-Article 03*).

Table VI provides the results for all soil samples tested for PCBs at the site and Figure 8 provides the PCB sampling locations; samples were collected at more than one depth at most locations. Aroclor 1242 and Aroclor 1248 have been detected in exceedance of the 100 ppm PCB level in the soil samples. The Aroclor detected in the surface samples is primarily 1248 whereas the Aroclor detected in the deep samples is primarily 1242. Other Aroclors (1232, 1254, and 1260) have been detected at low levels in isolated soil samples. As indicated in Figure 8, the extent of surficial PCBs is limited and the soils from the impacted area are proposed to be excavated, as detailed in Section 7.6. PCBs exceeding the 100 ppm level in deep soil samples are also limited to a few isolated locations. Section 7.6 also outlines the proposed remedial strategy for the deep sub-surface PCBs, primarily associated with DNAPLs.

Relatively low concentrations of PCBs have been detected in the groundwater samples compared to the levels detected in the soils. This indicates the tendency of PCBs to adsorb strongly to soil, limiting their mobility and potential for groundwater contamination. The high affinity of the PCBs to the soil particles was examined by analyzing both filtered and unfiltered groundwater samples for PCBs in 1993. Out of the seven wells for which both types of samples were collected, PCBs were detected in the unfiltered samples from five wells in the range of 1.9 µg/L to 470 µg/L (Table VII). On the other hand, PCBs were not detected in the filtered samples from the six out of the seven wells tested.

For the most recent groundwater sampling round in 1998, PCBs were detected in unfiltered samples from the shallow wells in the range of non-detect to 150 µg/L; filtered samples were not collected. PCBs were also detected in two deep wells, MW-9 (1.5 µg/L) and MW-3 (0.35 µg/L), for the 1998 groundwater testing round; samples from all the other deep wells were non-detect for PCBs. Table VII and Table VIII provide PCB results for groundwater samples from shallow and deep wells, respectively.

## 6.3 Base/Neutral and Acid Extractable Organics (BNAs)

Although BNAs do not appear to be of significant concern at the site based on the review of the soil and groundwater data, a proposal for additional groundwater sampling for BNAs was provided in our 3 March 1999 letter in response to the NJDEP's 3 February 1999 letter; the proposal is outlined in Section 7.3. Of all the soil samples tested, only four exceeded the Residential Direct Contact Soil Cleanup Criteria (RDCSCC) at concentrations only marginally higher than the cleanup criteria (Table IX); the RDCSCC is the most stringent cleanup criteria for the BNA compounds. Additionally, of all the wells tested for BNAs, significant BNAs were detected only in well CW-3 and a few exceedances were detected in CW-11 and CW-12. The proposal for additional groundwater testing for BNAs, as stated above, includes sampling of CW-3, CW-11, and CW-12. Figure 9 provides the soil sample locations. Table X provides the exceedances for BNAs detected in the groundwater samples.

#### 6.4 Priority Pollutant Metals (PPMs)

Although metals do not appear to be of significant concern at the site based on the review of the soil and groundwater data, a proposal for additional groundwater sampling for PPMs was provided in our 3 March 1999 letter in response to the NJDEP's 3 February 1999 letter; the proposal is outlined in Section 7.3. Of all the soil samples tested for metals, only four samples exceeded the RDCSCC, which is the most stringent cleanup criteria for metals (Table XI). Figure 10 provides the sample locations. Table XI and Table XII provide the exceedances for metals detected in soil and groundwater samples.

#### 6.5 Technical Overview

The laboratory data presented with this report is reliable. A technical overview of the laboratory data was conducted in accordance with the Technical Requirements for Site Remediation (N.J.A.C. 7:26E). Specifically, the conformance/non-conformance summaries provided by the laboratory were reviewed. Extraction and Analysis Dates reported by the laboratory were reviewed and determined to be in compliance with the required holding times. NJDEP-certified laboratory, STL Envirotech (Certification # 12543) was used for analytical services.

The laboratory QA/QC packages for soil PCB analyses conducted in 1998 and 1999 are provided as separate volumes. Laboratory QA/QC packages for the soil and groundwater data collected prior to 1998 were submitted to the NJDEP with previous submissions. Additionally, laboratory QA/QC package and electronic deliverables for the groundwater data collected in July 1998 were submitted to the NJDEP with our October 1998 progress report. The electronic deliverables for the 1998 and 1999 PCB data are provided in the enclosed diskette. A printout indicating that the data passed the Electronic Data Submittal Application (EDSA) evaluation is provided with the cover letter.

#### 7.0 AREAS OF CONCERN (AOCs)

As discussed earlier, the soil and groundwater contamination at the Hexcel facility is related to the presence of DNAPL and LNAPL source areas. Due to the complex nature of contamination associated with the presence of DNAPLs, the selection of remedial strategy for the site was focused towards a technology that would be capable of remediating both soil and groundwater. Therefore, the primary Areas of Concern (AOCs) at the site are the DNAPL and LNAPL source areas which continue to impact the soil and groundwater quality at the site. We have also identified additional AOCs, as listed below, based on our proposals for additional investigation activities presented to the NJDEP in our 3 March 1999 letter in response to the NJDEP's 3 February 1999 letter. Therefore, based on our evaluation of the soil and groundwater results and a review of the proposals for further investigation presented in our 3 March 1999 letter, the AOCs for the Hexcel site can be summarized as follows:

- AOC 1: DNAPL and LNAPL Source Areas/ Exceedances of Volatile Organic Compounds (VOCs) in Soil and Groundwater
- AOC 2: Delineation of Groundwater Contamination to the South (across Molnar Road)
- AOC 3: Base/Neutral and Acid Extractable Organics (BNAs) and Priority Pollutant Metals (PPMs)
- AOC 4: Extent of Silt Layer in the Area of Former Building 2 and Investigation for Presence of DNAPL
- AOC 5: Groundwater Quality in the Deep (Lower Overburden) Formation
- AOC 6: Remediation of PCBs
- AOC 7: Bedrock Groundwater Investigation
- AOC 8: Saddle River as a Receptor
- AOC 9: Storm Sewer Outfall
- AOC 10: Industrial Sewer Line
- AOC 11: Hexcel Production Well

### 7.1 AOC 1: DNAPL and LNAPL Areas/ Volatile Organic Compounds (VOCs) in Soil and Groundwater

Based on the soil and groundwater testing conducted at the site and the continued product monitoring efforts, areas proposed to be targeted for remediation have been identified ("source areas"). The source areas include i.) areas of DNAPL and LNAPL presence as observed from product monitoring efforts, and ii) areas of soil contamination, as depicted in Figure 7. The identification of the source areas was important in the development of a remedial strategy for the site. Each of these source areas, which will be targeted for the implementation of the remedial action at the site, is shown in Figure 11 (below and also attached) and summarized in the following sub-sections. Although some of the source areas are adjoining each other, they have been divided into separate areas for the proposed 2-Phase application. Based on the final design of the 2-Phase Extraction system, it is possible that some of these areas might be merged, if appropriate.

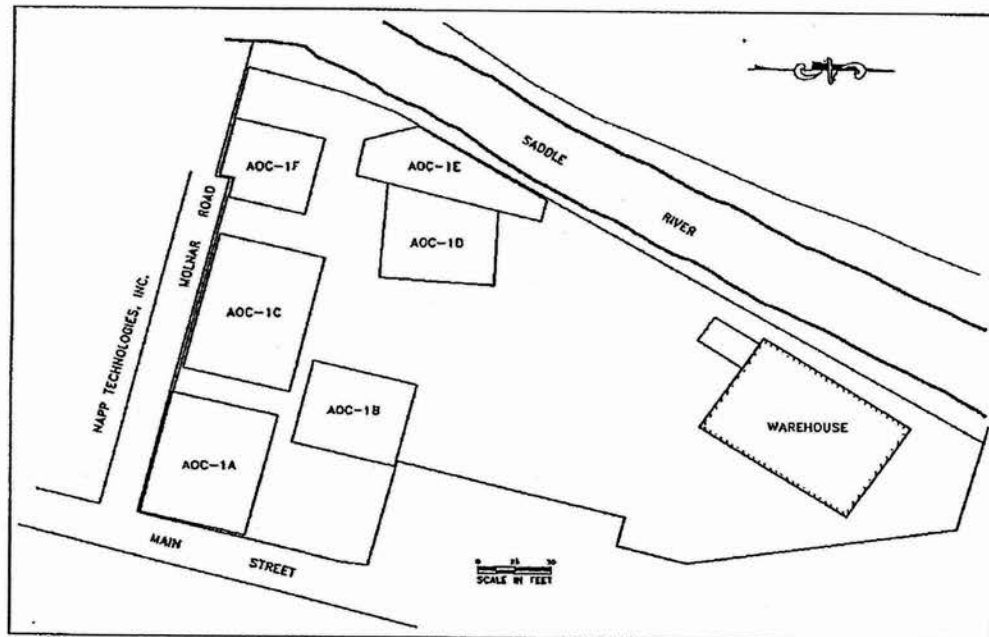


Figure 11: AOC-1, Areas Identified for 2-Phase Extraction Application

**AOC -1A:** Area close to the intersection of Main Street and Molnar Road where high methylene chloride concentrations have been detected in groundwater. The pilot test for the 2-Phase Extraction technology was conducted at AOC-1A.

**AOC -1B:** Area to the east of former Building 2 where exceedances for VOCs have been detected in soil and groundwater. Although no free product (LNAPL or DNAPL) has been detected in the monitoring wells MW-4 and MW-27 in AOC-1B, these wells have typically had very high concentrations of VOCs (> 100 ppm) detected in groundwater.

**AOC-1C:** Area of the basement pit and the adjoining areas of soil contamination. The basement pit has been long recognized as an area of concern due to the presence of DNAPL beneath the floor slab. One of the well points in the basement was utilized for DNAPL recovery until recently when the basement was secured with steel plates as part of demolition activities.

**AOC-1D:** Area to the west of former Building 2 where free product has been observed and recovered from monitoring and recovery wells. Specifically, monitoring well MW-6 in this area is the only well on-site that has indicated presence of DNAPL consistently over the past few years. Additionally, former aboveground storage tanks were also located in this area and soils testing has indicated elevated levels of VOCs.

**AOC-1E:** Area close to the Saddle River property boundary. Product monitoring at the site has indicated presence of DNAPL in some of the wells along the Saddle River property boundary. This source area is important because protection of the Saddle River is one of the remediation goals for the site (Section 12).

**AOC-1F:** LNAPL source area in the vicinity of well CW-7. Although no LNAPL has been detected in CW-7 for almost a year, substantial amounts of LNAPL have been recovered from this well historically. The remediation of this source area will enhance the groundwater quality in the downgradient well MW-10, which is located at the Saddle River property boundary.

The AOCs summarized above will be targeted for the implementation of the 2-Phase Extraction technology. Based on the results of the proposed investigation in the former Building 2, as outlined in Section 7.4 and previously submitted in our 3 March 1999 letter to you, this additional area will be targeted for remedial action, if necessary. Section 10 provides details on the proposed remedial action for AOC-1.

#### **7.2 AOC-2: Delineation of Groundwater Contamination to the South (across Molar Road)**

The evaluation of groundwater testing conducted in July 1998 indicates that additional testing to the south is not necessary to achieve delineation at this time, as we previously stated in our 3 March 1999 letter. Monitoring wells MW-22, MW-23, and MW-24, which are located along Molnar Road, were included in the July 1998 sampling for VOCs and PCBs. Hexcel was denied access by Napp to sample MW-25 (Hexcel well) and MW-E8 (Napp well) on their property.

Groundwater results indicate a significant improvement in concentrations detected in monitoring wells MW-22, MW-23, and MW-24. Specifically, total targeted VO concentrations in MW-22 decreased to about 1 part per million (ppm) in 1998 from 405 ppm in 1993. Similarly, total VOCs in MW-23 were detected at less than 0.1 ppm compared to 24 ppm in 1995. Additionally, the only compound detected in MW-24 was chlorobenzene at concentrations below the Ground Water Quality Standards. Although MW-E8 could not be sampled in July 1998, groundwater testing results from January 1997 indicate a total VO concentration of about 0.02 ppm. The historical groundwater testing data for shallow wells is provided in Table IV. Based on the testing results, Hexcel believes that groundwater contamination to the south along Molnar Road has been adequately delineated with regard to the contaminants at Hexcel.

#### **7.3 AOC 3: Base/Neutral and Acid Extractable Organics and Priority Pollutant Metals**

Hexcel proposes to perform groundwater sampling for metals as well as BNA testing, as outlined here and previously submitted in our 3 March 1999 letter. Hexcel proposes to perform groundwater sampling for all the shallow monitoring wells adjacent to the Saddle River (MW-8, MW-10, MW-14, and MW-28) and two control wells (CW-11 and CW-12) to evaluate the potential impact of BNAs and PPMs to the groundwater, as proposed in our 3 March 1999 letter. Additionally, control well CW-3 will be tested for BNAs since this was the only well that had indicated presence of significant BNAs when it was previously tested (in 1990). The results of the groundwater samples will be compared with GWQS to evaluate the need for further groundwater sampling for BNA and PPM parameters.

To evaluate the impact of turbidity on metals concentration, the samples will be collected using the low-flow purge method to reduce the effect of turbidity on metals concentrations. Additionally both filtered and unfiltered samples will be collected for metals analysis for a technical evaluation of the relationship between turbidity and metals concentrations, if any, at the site. Although NJDEP requires that results from only unfiltered samples be compared to the applicable standards, the filtered samples will be collected to evaluate the potential for the mobility of the metals. This additional groundwater sampling, as outlined above, will be performed upon the NJDEP's approval of the proposal.

#### **7.4 AOC 4: Extent of Silt Layer in the Area of Former Building 2 and Investigation for Presence of DNAPL**

Hexcel proposes to install a boring in the former Building 2 area to define the extent of the confining layer and investigate the presence of DNAPL in this area, as previously proposed in our 3 March 1999 letter to you. If the confining layer exists, the boring will be terminated at the top of the confining layer. Continuous sampling will be performed for visual inspection and field screening. The boring will be completed as a shallow monitoring well only if DNAPL is observed in the soil split spoon samples. If the confining layer is absent in this area, this would imply that the construction fill for the subsurface structure extends through the confining layer. If this is the case, the boring location will then be completed as a "deep" monitoring well in this case. The monitoring well will be completed with the top of the screen set at about 3 feet NGVD elevation, which is comparable to the top of the screen elevation for the nearest deep monitoring well MW-7. Hexcel will perform the activities following NJDEP's approval of this proposal.

#### **7.5 AOC 5: Groundwater Quality in the Deep (Lower Overburden) Formation**

Hexcel proposes to continue monitoring the wells screened in the lower overburden formation within the groundwater monitoring program for the site. Although dissolved concentrations of VOCs have been detected in the monitoring wells at the Hexcel site, these have typically been two to three orders of magnitude lower than the upper overburden formation. Additionally, DNAPL has never been detected or indicated in any of the deep wells. The above indicates that the silt-clay layer is an effective confining unit at the site.

The groundwater quality in the lower formation is expected to improve with the implementation of remedial action to remediate the DNAPL source areas in the shallow formation. Hexcel will continue to monitor the deep wells, while remedial action is implemented at the site, to evaluate the success of the remediation process.

#### **7.6 AOC 6: Remediation of PCBs**

As discussed in Section 6.2, based on the comprehensive PCB soil sampling conducted in 1998 and 1999 the PCB contamination at the site can be categorized into two areas; i) the presence of elevated levels of PCBs on the ground surface in the vicinity of the former Boiler room, and ii) PCBs primarily associated with DNAPL at depth, detected in the upper overburden soil samples. Both of these areas are discussed below.

Surficial PCBs: Hexcel proposes to excavate the limited area of elevated PCB levels, as shown in Figure 8, to a depth of 2 feet below ground surface. The surface PCBs have been delineated for the purposes of implementing remedial action. In the westerly direction, the surface soils will be excavated beyond sample HA-43 and HA-44, which had concentrations of PCBs exceeding the 100 ppm level. In the north direction, the excavation will be extended to the edge of the former boiler room. The slab of the former boiler room was left intact during demolition, therefore, the potential for surface exposure to PCBs, if any, is minimized. Post-excavation sample will be collected in accordance with the Technical Requirements for Site Remediation (N.J.A.C. 7:26B). Since field screening methods are not available for PCBs, post-excavation samples will be biased towards worst areas based on

visual observations. Following excavation and collection of post-excavation surface samples, the area will be backfilled using clean backfill. Additionally, the area will be capped using an asphalt cover. This area will be included in the implementation of an institutional control at the site in the form of a Deed Notice.

PCBs in deeper soil samples: PCBs have been detected at concentrations exceeding the 100 ppm level in soil samples at depths below 5 feet from the ground surface. These soil sample locations are isolated and will be included in the areas proposed for 2-Phase implementation. Hexcel proposes to re-evaluate the locations exceeding the 100 ppm PCB level following the implementation of the 2-Phase remediation. During the remediation of source areas by implementation of 2-Phase, PCBs may be removed by removal of contaminated groundwater. The recovery of contaminated groundwater can be expected to reduce PCB concentrations in the formation together with the reduction in the VOC concentrations. Therefore, Hexcel proposes to re-evaluate the locations of PCB exceedances including the basement area for PCB concentrations, following implementation of the 2-Phase Extraction remediation process. The residual concentrations of PCBs in soil will be evaluated with respect to the impact on groundwater quality and if necessary, a petition for a risk-based alternate standard will be submitted to the regional USEPA administrator and the NJDEP case manager for consideration.

#### **7.7 AOC 7: Bedrock Groundwater Investigation**

The NJDEP has required installation of a bedrock well in the vicinity of MW-1, since this well is screened just above bedrock and contains elevated concentrations of chlorinated compounds. Hexcel acknowledges the NJDEP's requirement for vertical delineation in this area and will install a bedrock well near MW-1.

The schedule for bedrock well installation will be dependent on the schedule for implementation of remediation of the shallow overburden in this area. Hexcel is concerned about opening a pathway for deeper contamination. In spite of taking appropriate measures to avoid cross-contamination of the formations, the risk is a valid concern because of the thinning of the confining layer in this area. Therefore, Hexcel proposes to install the bedrock well for vertical delineation following remediation of the shallow contamination in this area.

#### **7.8 AOC 8: Saddle River as a Receptor**

Saddle River is an AOC due to its proximity to the site and the potential for environmental impact to its surface water and sediments from contamination on the Hexcel facility. We propose to evaluate the Saddle River by conducting surface water sampling, and an ecological assessment including evaluation and chemical testing of sediments. Each of these proposals are discussed below.

Surface Water Sampling: The compliance of surface water samples to the Surface Water Quality Criteria (SWQC) is a primary performance criteria of the remediation plan. Although Hexcel proposed collecting surface water samples at five locations in its letter dated 3 March 1999 to the NJDEP, NJDEP advised us in the May 1999 meeting that the proposal could not be approved since the agency imposed similar requirements on Napp. NJDEP has required surface water samples at seven locations based on a sample spacing of approximately one sample every 60 feet as required for Napp. The surface water samples will be analyzed for VOCs and PCBs. The need to include BNA and metals testing for surface water samples will be evaluated based on the results of the groundwater testing proposed in Section 7.3 above. Specifically, surface water samples will be analyzed for BNA and metal parameters only if concentrations exceeding the GWQS are detected in wells tested along the Saddle River. Therefore, surface water sampling will be performed upon NJDEP's approval of the additional groundwater testing proposal presented in Section 7.3 and evaluation of the groundwater testing results.

Ecological Evaluation: Hexcel will conduct an ecological evaluation pursuant to the Technical Requirements for Site Remediation. Pursuant to N.J.A.C. 7:26E-3.11 and 7:26E-4.7, Hexcel proposes to conduct the baseline ecological evaluation together with additional sampling, as proposed below, to evaluate the potential ecological impact of the on-site contamination to the river. Specifically, the ecological evaluation will include an inspection for the entire site for visual observations of stressed vegetation along the riverbank and unpaved portions of the site, and an assessment of the surface water and sediments. Sediment samples will be collected to examine the presence of benthic invertebrates. Visual observations of contamination, if any, in the sediments will also be noted. In addition, sediment samples will also be collected for chemical analyses. The parameters for chemical analyses will be determined based on the results of the groundwater sampling. Sediment samples will be collected from an upstream location, potentially worst area (opposite well MW-8) adjacent to the riverbank, and a downstream location, for a qualitative comparison on abundance of the benthic organisms. The results of the ecological assessment activities, including results of chemical testing of sediments and surface water, will be provided to the NJDEP with our recommendations.

#### 7.9 AOC 9: Storm Sewer Outfall

Hexcel requests that no further action be required for the sediments associated with the storm sewer outfall. Hexcel believes that the request is appropriate due to the following reasons:

- The sediment sampling results have shown presence of PCBs all along the Saddle River. The evaluation of the results of sediment sampling conducted by Hexcel and others were presented in our progress report dated 28 January 1998. The results are summarized in Table XIII and the locations of the sediment samples are provided in Figure 12.
- The storm sewer conveys runoff from a large area of Industrial Lodi. The contribution of other sources, including users of the storm sewer prior to its entrance onto the Hexcel and Napp properties and redistribution of sediments due to flooding events, is a significant factor.
- Saddle River is prone to significant flooding and more than seven major flood events have been recorded in the past thirty year with the most recent floods associated with Hurricane Floyd in September 1999. Significant redistribution of sediments, affecting the localized depositional environments, occurs from these flooding events.
- The U.S. Army Corps of Engineers (Army Corps), as NJDEP is aware, has a plan to widen and deepen the Saddle River channel as a flood protection measure. The Army Corps plan, when implemented, will involve dredging of the river sediments. Based on the Army Corps' report (*Interim Report on Flood Protection Feasibility, Lower Saddle River, Bergen Co., NJ*), Army Corps expects to encounter PCB contamination in sediments along a major portion of the Saddle River.

Therefore, based on the Army Corps plan for the Saddle River channel for the future, Hexcel believes that no further action be required for the sediments associated with the storm sewer outfall. The request for no further action is also appropriate due to the potential of contribution of other sources including users of the storm sewer prior to and after its entrance onto the Hexcel property and redistribution of sediments due to flooding events.

#### 7.10 AOC 10: Industrial Sewer Line

Hexcel proposes to abandon the existing industrial sewer line. The 24-inch reinforced concrete pipe, which runs from the vicinity of the existing warehouse to the Hendrix pump station, has been reported to be filled with sediments with elevated levels of PCBs. Hexcel proposes to hydraulically flush and vacuum the interior of approximately 400 feet of length of

the sewer line, from origin to Molnar Road. The recovered sediments will be tested for waste classification and transported for disposal to an appropriate facility. The sewer line will be jet-grouted using a cement-bentonite mixture. It is important that the sewer line be grouted prior to implementation of 2-Phase in the areas through which it runs, otherwise the open sewer line might act as a vacuum sink reducing the efficiency of 2-Phase Extraction in the area of the sewer line.

#### **7.11 AOC 11: Production Well**

Hexcel proposes to abandon the existing production well on the site, which is no longer used since cessation of operations at the facility. The production well is approximately 240 feet deep with 38 feet of casing. Upon NJDEP's approval, Hexcel will sub-contract a NJ licensed well driller to perform well closure activities.

### **8.0 REMEDIAL ACTION SELECTION**

A comprehensive review of all remedial technologies was undertaken in 1998 with the objective to develop a comprehensive remedial plan for the site. We examined approximately 17 types of technologies and over 100 remedial process options. All options were evaluated for their effectiveness in remediating the contaminants in the specific media and for limitations of their applications. Based on the nature of contamination and the hydrogeological characteristics of the site, 2-Phase Extraction was selected as the most viable technology for remediation of contaminated soil and groundwater at the site. 2-Phase Extraction was selected for its versatility in treating both contaminated soil and groundwater (both vadose and saturated zones) simultaneously and its applicability to remediate source areas as well as dissolved concentrations of volatile organics in groundwater. The 2-Phase Extraction process and its site-specific application are discussed in Section 10. Additionally, a Hydrogen Release Compound (HRC™) application was selected as a possible polishing step, if required, to follow the 2-Phase Extraction. The HRC application is capable of enhancing the naturally occurring degradation processes of chlorinated solvents and can be applied to dissolved plumes. As such, HRC application was evaluated and selected as a potential process to enhance natural degradation processes for achieving the site-specific remediation goals (discussed in Section 12), if necessary when 2-Phase indicates an asymptotic recovery of contaminant mass. A brief description of the HRC application is provided in Section 11.

### **9.0 REGULATORY ACCEPTANCE**

In our 20 May 1999 meeting with the NJDEP in which we presented the conceptual remedial plan, NJDEP requested information on previous applications of 2-Phase and HRC at other sites and on endorsements within the regulatory community. The NJDEP also inquired about endorsement from the Interstate Technology Regulatory Cooperative (ITRC). We visited ITRC's webpage on the Internet and contacted Mr. Frank Camera of the NJDEP who was listed as a contact. Mr. Camera advised us that ITRC's list of innovative characterization and remediation technologies is not inclusive of all available technologies. He was not surprised that 2-Phase Extraction and HRC are not part of the ITRC's current list. The sub-sections below discuss some of the applications for these technologies together with their regulatory endorsements.

#### **9.1 2-Phase Extraction**

2-Phase Extraction (or Vacuum-Enhanced Recovery) has been applied successfully at many NAPL sites and is listed as a technology that is in transition from being innovative to conventional (*Remediation Engineering: Design Concepts*, Suthan S. Suthersan, 1996). 2-Phase Extraction was one of the seven technologies that were demonstrated at the McClellan Air Force Base (AFB) which has been designated as the Chlorinated Hydrocarbons Remedial Demonstration Site as part of the National Environmental Technology Test Site (NETTS) Program. NETTS is a joint Department of Defense and USEPA program for the evaluation

and testing of environmental remedial technologies. The 2-Phase Extraction technology demonstration at the McClellan AFB site was highly successful. Before conversion to a 2-Phase Extraction system, two wells together had extracted an average of 120 pounds of contamination per year from conventional pump and treat. In the first six months of 2-Phase Extraction from one well, approximately 1600 pounds of contamination was removed from the soil and groundwater. The Technology Fact Sheet states that the 2-Phase Extraction technology extracts VOCs from the soil while simultaneously removing contaminated groundwater and concludes that the use of 2-Phase Extraction accelerated the cleanup of both soil and groundwater contamination at the McClellan AFB. Information on the 2-Phase Extraction demonstration, downloaded from the Internet, is provided as Appendix B.

Haley & Aldrich has extensive experience in successful implementation of the 2-Phase Extraction technology in various states. Haley & Aldrich was instrumental in the development of the 2-Phase Extraction technology patented by Xerox, Inc, which was used at the McClellan AFB site. The Xerox-patented technology was also utilized for soil and groundwater remediation at an industrial facility in Blauvelt, New York. The New York State Department of Environmental Conservation (NYSDEC) has identified 2-Phase Extraction as the selected remedial technology in the Record of Decision for the Blauvelt site. Table XIV provides a summary of 2-Phase Extraction projects implemented by Haley & Aldrich, including information on the geologic setting, contaminants of concern, and the mass-removal performance.

A pilot test was performed at the Hexcel facility using the Xerox technology which indicated the effectiveness of the 2-Phase Extraction technique compared to a conventional pump and treat previously approved for the site in 1990. The pilot test results are discussed in the Section 10.2.

## **9.2 Hydrogen Release Compound (HRC™)**

Hydrogen Release Compound (HRC™) is a fairly new proprietary compound marketed by Regenes Bioremediation Products, Inc. and is in the commercial application stage for the in-situ enhancement of anaerobic degradation processes. Data from the HRC development stage and early commercial applications were presented in the International Environmental Technology Expo'99, hosted by the NJDEP in April 1999. Haley & Aldrich has conducted one of first field applications of HRC in New Jersey at an industrial facility in Moonachie. The HRC injection was completed in May 1999 and monthly testing of indicator parameters shows that anaerobic conditions are being produced due to HRC injection, which should enhance the degradation of the dissolved chlorinated VOCs present in the groundwater. The site is referred to as Crest-Foam Corp. and the NJDEP case manager on this ISRA case is Mr. Richard Burgos.

## **10.0 2-PHASE EXTRACTION**

2-Phase Extraction is an innovative remedial process patented by Xerox Corporation that combines the attributes of soil vapor extraction and groundwater recovery and has been developed for in-situ remediation of volatile organic compounds in soils and groundwater. The process operates by applying a vacuum (typically high vacuum > 25" Hg) below the water table to simultaneously extract groundwater and soil vapor. This process has been successfully implemented on sites throughout the United States, Canada, and Europe, with varying geologic conditions and contaminants, and has been proven to accelerate site remediation process and reduce overall project life cycle costs. This section will provide details on process descriptions, regulatory acceptance of the technology and the results of the 2-Phase pilot test conducted at the Hexcel site.

## 10.1 Process Description

2-Phase Extraction simultaneously recovers groundwater and soil vapor under high vacuum from a modified conventional recovery well. Groundwater and soil vapors that enter the well under vacuum are removed from the well casing. The 2-Phase Extraction process accelerates groundwater extraction rates, the removal of volatile contaminants present as free product (NAPLs), and enhances partitioning of soil vapors and materials sorbed to the soil. The bulk of the volatile contaminants present in groundwater recovered by 2-Phase are stripped during extraction. The contaminant mass originally in groundwater is transferred to the vapor phase. The contaminant mass recovered can be greater than that would be achieved with conventional pump and treat technology as all contaminant phases can be simultaneously influenced during extraction. An additional benefit as compared to other conventional groundwater remedial technologies is that there is no groundwater extraction pump required within the recovery well, which also eliminates the need for electrical or pneumatic connections. The extraction wells within the contaminant plume are fitted with an extraction tube to access the contamination zone at depth. Extraction wells are conventionally constructed wells, and can be retrofitted from existing monitoring wells in some cases.

The 2-Phase Extraction process achieves enhanced mass removal by accessing all contaminant phases simultaneously. These phases typically consist of dissolved constituents in groundwater, non-aqueous phase liquids (NAPL), soil vapor, and/or materials sorbed to soils above and below the original saturated zone. The contaminant mass that is extracted is stripped from the groundwater and transferred into the vapor phase, where treatment is more cost effective. 2-Phase Extraction relies on the following major mass removal mechanisms for in-situ remediation of soil and groundwater:

- i.) Increased airflow in previously saturated and capillary zones
  - Application of vacuum allows for capillary pressures to be overcome, forcing the release of retained water and residual product.
  - Once the soils are dewatered, the formation is then open to the airflow created by the high vacuum system.
  - Application of high vacuums creates a large driving force for airflow in the vadose and the dewatered zones.
- ii.) Increased groundwater recovery rates
  - Application of high vacuum allows for increased pumping rate by increasing the net hydraulic head differential.
- iii.) Increased recoverability of free-phase product
  - Enhanced recovery of residual product trapped due to the heterogeneity within the formation.
  - For LNAPL, airflow created along the free product/vadose zone interface will cause increased partitioning from the free-phase to the vapor phase.
  - For DNAPL, in low permeability formations or with additional groundwater control, 2-Phase Extraction is capable of drawing the phreatic surface down to the confining layer. This allows for the target zone, which typically would be the at the confining layer for DNAPL, to be accessible to airflow and drainage from capillaries resulting in contaminated vapor and water recovery from the most contaminated zone in the formation.

## 10.2 Pilot Test Results

A pilot test was performed at the southwest corner of the site (near intersection of Main Street and Molnar Road), designated as AOC-1A, to evaluate the viability of the 2-Phase technology at this area. Due to the thinning of the silt layer, running sands, and subsurface structures (utility beds and steam tunnel), it was anticipated that vapor and groundwater flows would be

higher than at other portions of the site and pose the most difficulty for the 2-Phase technology.

The pilot test results indicate successful contaminant removal occurred with mass removal rates approximately 40 times greater in vapors than in groundwater illustrating its superior effectiveness over conventional pump and treat. The contaminated vapors recovered during the pilot test corresponded to approximately 7.4 pounds/hour of product recovery compared to 0.18 pounds/hour in the recovered contaminated water. This demonstrated that with the conditions observed during the pilot test, the 2-Phase Extraction system was 40 times more effective than a conventional pump and treat system. The pilot test was performed on two existing wells; CW-5 and MW-17. The details of the pilot test procedures are provided in Appendix C. The results of the pilot test on each of the wells are presented below.

Well CW-5 - Extraction Well

Duration: 110-minutes  
Average Vapor Flow Rate: 125-scfm  
Average Water Flow Rate: 3.4-gpm  
Vacuum Applied at Vacuum Truck: 13-in-Hg  
Vacuum at Well Head: 6-in-Hg  
Vacuum on Well Screen: 2-in-Hg  
Contaminant Removal Rate in Vapor: 7.36-lbs/hour  
Contaminant Removal Rate in Water: 0.18-lbs/hour  
Groundwater Drawdown in Observation Wells\*:  $\leq 0.1$ -feet in all wells  
Vacuum in Observation Wells\*: 1.0-in-H<sub>2</sub> at MW-22,  $\leq 1.0$ -in-H<sub>2</sub>O in all other wells

Well MW-17 - Extraction Well

Duration: 265-minutes  
Average Vapor Flow Rate: 120-scfm  
Average Water Flow Rate: 2-gpm  
Vacuum Applied at Vacuum Truck: 12-in-Hg  
Vacuum at Well Head: 6-in-Hg  
Vacuum on Well Screen: 3-in-Hg  
Contaminant Removal Rate in Vapor: 2.06-lbs/hour  
Contaminant Removal Rate in Water: 0.24-lbs/hour  
Groundwater Drawdown in Observation Wells\*: 1-foot in MW-1,  $\leq 0.1$ -feet in all other wells  
Vacuum in Observation Wells\*:  $\leq 1.0$ -in-H<sub>2</sub>O in all wells

\* - Observation wells included CW-6, MW-22, MW-17 and MW-1 for the CW-5 pilot test and MW-1, CW-6, CW-5, MW-22, and CW-4 for the MW-17 pilot test.

As was expected, the AOC-1A area yielded high vapor and water flow rates. The high vapor and water flow rates may be attributed to the thinning of the silt layer, the presence utility beds (water and sewer) and other subsurface structures along Main Street. Although there was a loss of vacuum due to the high vapor and water flow rates, the contaminant removal rates were substantially higher than those expected from a conventional pump and treat or a dual-pump system. Based on the measurements collected during the pilot test results, it is believed that the addition of a subsurface low-permeable containment structure (sheetpiling) around the treatment area in AOC-1A would enhance the efficiency of contaminant removal by reducing venting through utilities and from adjacent properties. Installation of sheetpiling around the perimeter of the extraction area at AOC-1A should result in a reduction of water and vapor flow rates. This reduction in the vapor flow would likely increase the vacuum on the well screen by three times or more, confining the vacuum to the target area and equate to a comparable increase in contaminant removal rates. The need for installation of a containment structure at other 2-Phase Extraction areas will be evaluated based on the subsurface information collected during the pre-construction phase.

### 10.3 Site-Specific Application

This section provides details on the application of the 2-Phase technology for the site including the preliminary design parameters, description of the 2-Phase process, air and groundwater treatment processes and system monitoring. The discussion of the application is provided under the following sub-sections.

- Pre-Construction Tasks
- Strategy for Implementation
- Remedial Application Description
- Performance Monitoring
- Permit Requirements
- Additional Areas of Application

#### 10.3.1 Pre-Construction Tasks

Prior to the installation of the 2-Phase system, a subsurface investigation will be performed which will include performing borings in the extraction area. The subsurface investigation will be tailored to collect information for the configuration and the possible installation of the sheet piling and additional extraction/monitoring well, where necessary. Additionally, information, such as the conditions of the confining layer, will be noted along with the depth at which the confining layer is encountered.

Following the subsurface investigation, additional extraction/monitoring wells will be installed in target areas, where necessary. Refer to Figure 13, for proposed extraction well locations for AOC-1A. These locations are approximate and actual locations will be determined by field conditions.

Wells in the target area and the vicinity will be sampled prior to the implementation of the 2-Phase technology. Approximately six to eight wells will be sampled for VOCs (VO + 10 by Method 624) and PCBs (Method 608). The data from this sampling event will be utilized as the baseline for comparison after remediation.

Based upon the information available, the 2-Phase system will be designed and project specifications will be developed prior to installation. Based on the measurements collected during the pilot test results, it is believed that the addition of a subsurface low-permeable containment structure (sheetpiling) around the treatment area in AOC-1A would enhance the efficiency of contaminant removal by reducing venting through utilities and from adjacent properties. Based on the available sub-surface information for the specific area of application, specifications will be developed for the containment structure, if needed. The sheetpiling structure for the area will be removed following the termination of the 2-Phase operation.

The design and project specifications will include the following:

- Configuration of the sheet piling and extraction/monitoring wells
- Equipment specifications for the 2-Phase system, and groundwater and vapor treatment system components
- Design layout for the 2-Phase Extraction system, and groundwater and vapor treatment components

#### 10.3.2 Strategy for Implementation

As discussed in Section 7.1, the source areas have been divided into six (6) separate areas for application of 2-Phase Extraction technology (AOC-1A through AOC-1F). The 2-Phase

Extraction will be implemented in a stepwise approach, commencing at the most upgradient area and proceeding to further downgradient areas. The proposed strategy for this site is to initiate 2-Phase Extraction at AOC-1A (Section 7.1, Figure 13). Prior to 2-Phase application in an area, a containment structure will be constructed for that area if needed. The duration for which the 2-Phase Extraction operation is continued in a certain area will depend on the baseline concentrations, the efficiency of the system, and the performance criteria (Section 10.3.4). The containment structure for each area will be removed following the termination of the 2-Phase operation in that area.

### 10.3.3 Remedial Application Description

The conceptual process arrangement is shown in Figure 14 below and the process is schematically shown on Figure 15 (attached). The existing warehouse building will contain all the equipment for the 2-Phase Extraction skid and the treatment components. The vapor capacity and the motor sizing for the 2-Phase Extraction skid will be developed during the design phase. The skid will include a self-contained seal oil circulation system; an inlet separator to separate the water and vapor phases; a water transfer pump with filters; a vapor conditioning system, if required; and a common control panel with emergency shutdowns.

The water and vapor recovered and separated at the skid will undergo treatment prior to their respective discharge points. We anticipate the water treatment components to include air stripper(s), granular-activated carbon vessel(s), and filter units to achieve the appropriate discharge limits for the effluent to the Passaic Valley Sewerage Commissioners (PVSC) sewer line. The vapor treatment components will include a catalytic or thermal oxidizer and a scrubber to achieve the permit limits for VOCs and acid gas emissions at the discharge stack.

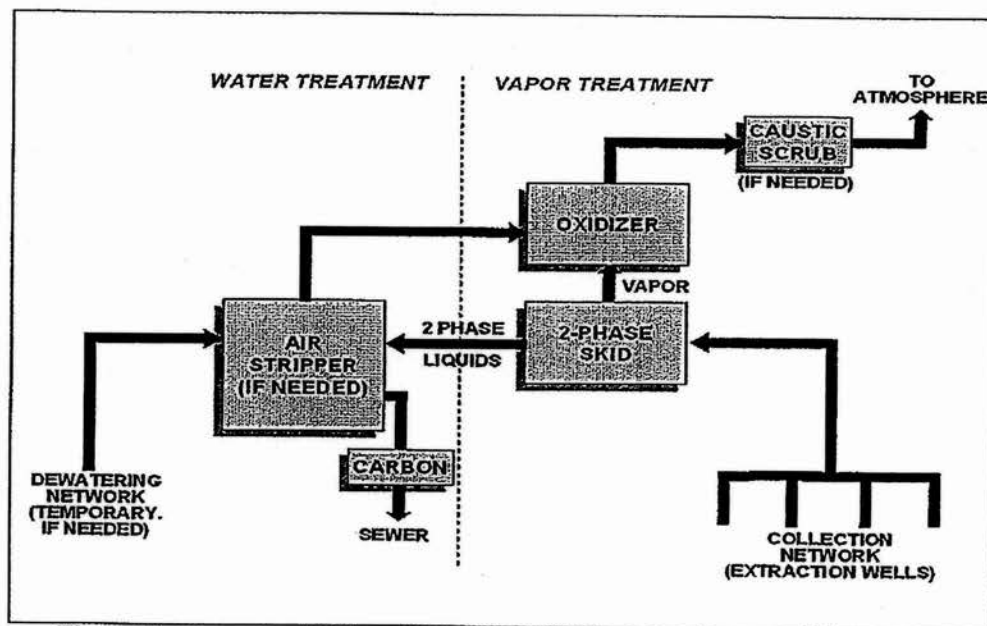


Figure 14: Conceptual 2-Phase Extraction and Treatment Process Arrangement

The 2-Phase Extraction wells will be cycled depending on flow rates and vacuum levels on the well screen to optimize the operation of the vacuum pump. The wells that are not operating will be used as observation wells, to evaluate the vacuum influence and water levels on the site. The piping header will transfer the recovered water and vapor to the treatment system located in the existing warehouse building. The treated groundwater will be

discharged to the PVSC sewer line. The treated vapor will be discharged to the atmosphere in compliance with the air permitting requirements.

#### 10.3.4 Performance Monitoring

The proposed performance monitoring for the remedial system will include operational data for the extraction and treatment equipment and analysis of the recovered groundwater and soil vapor. Additionally, the effectiveness of the 2-Phase Extraction process will be assessed by sampling and analysis of the groundwater within the anticipated remedial zone, and where appropriate, observations for NAPLs.

Operational data of the equipment will be collected and recorded to maintain that the equipment is operating optimally. The data to be collected includes, groundwater flow, vapor flow, operating vacuum and pressures throughout the system, and operating temperatures throughout the system. This data will insure that the equipment is maintained at proper intervals and project scheduled down times for maintenance reasons. Initially, it is planned to collect this data one to two times per week at start-up then decrease to weekly, then monthly thereafter.

During the operation of the 2-Phase system, vapor and groundwater samples will be collected and tested for VOCs to verify and monitor mass removal rates. This data shall also be used to determine the treatment efficiencies and carbon loading. The analytical concentrations and the corresponding flow rates will be used to calculate the mass removal rates. The sampling frequency and required analytical methods will comply with the permits that are required. The frequency of the sampling events will be higher during the beginning of the system operation to develop a preliminary estimate of likely remedial duration and subsequently become lower over the duration of the operation. When concentrations in the vapor and water reach asymptotic conditions, the operation of the 2-Phase system will be terminated.

Groundwater monitoring will include the wells that are sampled as the baseline and will be periodically sampled for VOCs to determine the effectiveness of the extraction system. Initially, the periodic sampling will occur quarterly, until the system effectiveness is predicted and then the sampling frequency will be reduced to semi-annually. During the groundwater sampling, groundwater elevations will be also collected to evaluate the capture zone.

In the LNAPL and DNAPL source areas, wells will be monitored for NAPL presence using an interface probe. The product monitoring will be conducted at the time of weekly site visits. Additionally, we plan to investigate DNAPL presence and collect groundwater samples for VOC analyses using alternative groundwater sampling techniques (for example, temporary well points) at locations within the area of 2-Phase implementation. The data from the temporary points, in addition to the data from the monitoring wells, will enable us to evaluate the groundwater quality and observations for DNAPL over the area of the application. This will also allow us to assess if the data from the wells is representative of the area.

#### 10.3.5 Permits Required

Several permits will be obtained prior to the construction and operation of the 2-Phase Extraction System, and the groundwater and vapor treatment components as listed below:

- **Sewer Use Permit:** At the request of the PVSC, the Sewer Permit was terminated in November 1998 when the groundwater treatment system was dismantled prior to demolition activities. Therefore, the PVSC Sewer Use Permit will be re-instated by completing a new Sewer Use Permit Application to the PVSC. Additionally, a Treatment Works Approval (TWA) will be obtained since the discharge to the PVSC sewer is expected to exceed 8,000 gallons per day.

- Air Permit will be required for the VOC emissions from the 2-Phase Extraction system. As discussed in Section 10.3.3, the vapor phase from the 2-Phase Extraction will be treated using a Catalytic or a Thermal Oxidizer. An application for the construction and operation of the 2-Phase Extraction system will be submitted to the NJDEP's Bureau of New Source Review.
- Air Permit will also be required for the vapor phase VOC emissions from the air-stripping of the recovered groundwater. Hexcel has a temporary air permit in place for operation of the existing groundwater treatment system. Due to the change in the location of the groundwater treatment system (from Building 1 pit to the Warehouse), a minor modification request will be submitted for the existing air permit.

## 11.0 HYDROGEN RELEASE COMPOUND

Hydrogen Release Compound™ (HRC™) application has been evaluated for the Hexcel site as a "polishing" step to achieve the site-specific cleanup objectives, if needed, following the 2-Phase Extraction application. HRC is a proprietary product of Regenesis, Inc., who also markets Oxygen Release Compound™ (ORC™). HRC is food quality polylactate ester that releases lactic acid upon hydration. Indigenous anaerobic microbes metabolize the lactic acid and produce hydrogen, which can in turn be used by reductive dehalogenators to dechlorinate the chlorinated aliphatic hydrocarbons (CAHs), such as PCE, TCE, TCA dissolved in groundwater. At the present time, HRC applications are fairly new but seem to be gaining regulatory acceptance. The HRC application technology will be further assessed upon completion of the 2-Phase application at the site to evaluate its site-specific applicability for the Hexcel site.

## 12.0 REMEDIATION GOALS

The remedial strategy for the site has been developed to achieve the site-specific remediation goals, which are consistent with the technical regulations and the remediation requirements stated by the NJDEP, in its 27 May 1998 letter to Hexcel. Specifically, the NJDEP had advised that, for consistency with remediation requirements for the Napp Technologies, Inc. site, Hexcel shall:

- Contain or remove all site-related free and residual LNAPL and DNAPL, both above and below the water table, pursuant to the Technical Requirements for Site Remediation (TRSR, N.J.A.C. 7:26B-6.1(d));
- Contain and remove all additional site-related sources of ground water contamination to the extent necessary to successfully complete a natural remediation program that has been performed in accordance with the TRSR [N.J.A.C. 7:26B-6.3(d)];
- Perform whatever actions are necessary to prevent site-related exceedances of FW2 Surface Water Quality Criteria (SWQC) of the Surface Water Quality Standards (N.J.A.C. 7:9B) within the Saddle River.

The remedial plan presented in this RAWA is consistent with the above-listed objectives. Specifically, as presented in the discussion of AOC-1 (Section 7.1), source areas of LNAPL and DNAPL, and additional areas of soil and groundwater contamination have been identified for remediation by implementation by 2-Phase Extraction. Upon completion of the 2-Phase, site related sources will have been removed or contained sufficiently to complete a natural remediation program. The site-specific remediation performance criteria to achieve the requirements listed in items a), b), and c) above will be evaluated as discussed below.

The success in achieving the remediation requirement listed in the item a) above will be evaluated as follows:

- Removal of free product (LNAPL and DNAPL): 2-Phase Extraction will be applied in the shallow formation in areas of LNAPL and DNAPL which will remove NAPL as is practical for in-situ technologies, and lead to an improvement in the groundwater quality at the site. This performance objective will be measured by monitoring the wells in each source area for presence of product and by the indication of asymptotic conditions of VOCs concentrations in recovered vapor and water in each target area.
- In addition to monitoring of the wells in each target area, groundwater samples will be collected from additional locations in the target area to evaluate groundwater quality over the area. Groundwater concentrations will be less than 1% of a compounds solubility, at a minimum.

The success in achieving the remediation requirement listed in the item b) above will be evaluated as follows:

- No increasing trend in the lower overburden (deep aquifer): The success of the groundwater remediation activities will also be evaluated based on the groundwater quality in the lower aquifer. Hexcel will continue to monitor the deep wells for VOCs and commence monitoring of a newly installed bedrock well, subsequent to shallow remediation in AOC-1A, to evaluate the success of the remediation process. The active remediation at the site will be focused towards the shallow formation where the source of contamination is present. Although concentrations of VOCs exceeding the GWQS have been detected in the deep wells, no free product has ever been detected in any of the lower overburden wells. With the implementation of the remediation activities in the shallow formation source areas, the groundwater quality in the deep formation can be expected to improve, although it may take some time for this to be demonstrated.
- Elimination of Surface Exposure to PCBs: In this RAWA, Hexcel has proposed excavation of areas with PCBs exceeding 100 ppm levels within 2 feet depth from the ground surface. Appropriate sampling will be performed to evaluate whether the post-remediation surface samples meet the 100 ppm level criteria. Additionally, the areas will be capped and a Deed Notice will be established for the areas.
- Containment of mobile subsurface PCBs and reduction in PCB concentrations: The mobility of the subsurface PCBs will be sufficiently reduced by remediation of DNAPL and LNAPL source areas. PCBs at the site have been found to be associated with both LNAPLs and DNAPLs. Hexcel proposes to re-evaluate the locations of PCB exceedances (> 100 ppm) following implementation of the 2-Phase Extraction remediation process. The residual concentrations of PCBs in soil will be evaluated with respect to the impact on groundwater quality and if necessary, a petition for a risk-based alternate standard will be submitted to the regional USEPA administrator and the NJDEP case manager for consideration, should PCBs exceed accepted levels after remediation.
- Upon removal of all known site-related sources of groundwater contamination, monitoring will be consistent with a natural remediation program, and institutional and engineering controls will be applied as necessary.

The success in achieving the remediation requirement listed in the item c) above will be evaluated as follows:

- Conformance of surface water samples from the Saddle River with the SWQC: The compliance of surface water samples to the Surface Water Quality Criteria (SWQC) is

a primary performance criteria of the remediation plan. Upon NJDEP's approval of surface water sampling proposal presented within this RAWA, a baseline for surface water quality will be established. With the implementation of the remediation activities, an enhancement in the surface water quality can be expected due to the reduction of contaminants discharged to the river from Hexcel, if there are no pollutants introduced to the River from upstream sources.

- No increasing trend in monitoring wells along the Saddle River: With the remediation of NAPL sources at the site, the quality of groundwater discharging into the Saddle River can be expected to improve. If it can be established that the concentrations of VOCs are not increasing in the wells along the Saddle River and if the performance criteria listed above (conformance of surface water samples from the Saddle River with the SWQC) is met, it can be expected that the site-related exceedances of SWQC will be prevented. This will fulfill the remediation requirement listed in item c) above.

### 13.0 REMEDIATION COSTS

Based on the proposed remedial strategy, the costs estimates for implementation of 2-Phase Extraction in the source areas, implementation of engineering and institutional controls, and additional tasks including monitoring, are provided in Table XV below. The cost estimate below assumes that the 2-Phase Extraction System will be operational for 3 years total (an average of 9 months in each source area identified, AOC-1A through AOC-1F).

**Table XV: Estimated Remediation Costs**

Task	Estimated Costs
Capital Costs (includes 2-Phase skid, dewatering system components, and sheetpile)	\$900,000
Design, Engineering and Construction Monitoring	\$250,000
Installation of 2-Phase System and Groundwater Treatment Components including connection to PVSC sewer line	\$300,000
Operation and Maintenance including analytical testing for performance monitoring, electrical and gas consumption, site visits, support personnel, and PVSC discharge fees	\$1,700,000 (over 3 years)
Permitting and Reporting including air and PVSC permits, Treatment Works Approval, Discharge Monitoring Reports, additional reporting and negotiations with NJDEP	\$250,000
Additional tasks including excavation of surface PCBs, asphalt cover over site, groundwater and surface water monitoring, ecological assessment, bedrock investigation, closure of industrial sewer line, steam tunnel, and abandonment of production well	\$1,300,000
<b>Total Remediation Costs</b>	<b>\$4,700,000</b>

Note: The cost estimate presented in Table XV assumes that the implementation of 2-Phase in the source areas will be sufficient to achieve the site-specific remediation objectives discussed in Section 12 of the RAWA. Therefore, the cost estimate does not include the cost of an HRC application.

### 14.0 REMEDIATION SCHEDULE

Based on Haley & Aldrich's experience with the 2-Phase Extraction Technology, we estimate operating the 2-Phase for an average of 9 months in each of the source areas identified. As discussed earlier, the duration for which 2-Phase Extraction operation is continued in a certain area will depend on the baseline concentrations, the efficiency of the system, and the performance criteria. Assuming an average of 9-month application in each area where 2-Phase Extraction process is proposed to be applied, the estimated schedule is provided in Table XVI below.

**Table XVI: Estimated Schedule for Remediation**

<b>Activity/Application</b>	<b>Estimated Schedule</b>
Submission of RAWA	November 1999
NJDEP's Approval of the RAWA	February 2000
Obtain Air and Groundwater Discharge Permits; Pre-Construction Tasks; System Design; Prepare Bid Specifications; Review Proposals from Contractors; Procure Equipment Additional Investigation Activities proposed in the RAWA including groundwater sampling, surface water sampling, and ecological assessment Excavation of Surface PCBs and Post-Excavation Sampling	March 2000 through December 2000
Commence 2-Phase in AOC-1A	January 2001
Implement and Continue 2-Phase in additional source areas	3 Years (Till December 2003)
Apply HRC, if appropriate Remove PCBs, if necessary	2004
Apply Engineering and Institutional Controls including a Classification Exception Area (CEA) and Deed Notice, if required	2004 or 2005
Continued groundwater monitoring as part of the CEA	Until site-specific cleanup objectives (Section 12) are met

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8 October 2003  
File No. 29756-013

Joseph J. Nowak  
New Jersey Department of Environmental Protection  
Bureau of Environmental Evaluation and Cleanup Responsibility Assessment  
P.O. Box 432  
401 East State Street  
Trenton, New Jersey 08625

Subject: Report on Sediment and Surface Water Sampling Program  
Hexcel Corporation  
Lodi Borough, Bergen County, New Jersey  
ISRA Case No. 86009

Dear Mr. Nowak:

OFFICES

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District of Columbia

On behalf of Hexcel Corporation (Hexcel), Haley & Aldrich, Inc. (Haley & Aldrich) is providing this Report on our Sediment and Surface Water Sampling Program (SSWSP) conducted in July 2003. This Report summarizes the results of remedial investigations approved by New Jersey Department of Environmental Protection (NJDEP) as proposed in Hexcel's Proposed River Bank and Sediment Sampling Work Plan dated 20 December 2002 and Hexcel's November 1999 Remedial Action Workplan Addendum. A copy of each of the NJDEP's approval letters, dated 19 March 2003 and 19 May 2003, is provided in Appendix A. The SSWSP was conducted in accordance with N.J.A.C. 7:26B Technical Requirements for Site Remediation and the NJDEP's November 1998 "Guidance For Sediment Quality Evaluation."

The objective of the SSWSP was to determine whether sediment and surface water may have been impacted by contaminants potentially migrating from the Hexcel Site (Site) and, if so, to delineate contaminants found both at the Hexcel Site and in the Saddle River. The SSWSP included sediment and surface water sampling and analyses in two Areas of Concern (AOCs) in the Saddle River: i) directly adjacent to the Hexcel Site, and ii) in the vicinity of a storm sewer outfall located approximately 750 feet south and downstream of the Site. In addition, the work conducted in this SSWSP was used to evaluate the results of Hexcel's 1997 sediment sampling program conducted in the vicinity of the storm sewer outfall.

An aerial photograph of the Hexcel Site and vicinity, including recent sediment and surface water sample locations, is provided in Figure 1. A site plan showing both AOCs is shown in Figure 2.

Our conclusions and recommendations based on the results of this sampling program are as follows:

- Surface water quality in the Saddle River adjacent to the Site has not been adversely impacted by the potential migration of compounds of concern from the Site. Polychlorinated biphenyls (PCBs) were not detected in any of the surface water samples collected, and only one site-related volatile organic (VO), chlorobenzene, was detected at low concentrations below the New Jersey Surface Water Quality Standard.
- The extent of sediment contamination potentially related to the Site has been delineated.
- Detected concentrations of compounds of concern in sediment are limited in extent and concentration, and are not anticipated to cause adverse impacts to potential ecological receptors.
- Sediments in the Saddle River adjacent to the Hexcel Site are minimally impacted by the potential migration of compounds of concern from the Site. The extent of VO contamination in sediments is limited in extent and concentration, and VOs in sediments are not discernibly migrating to surface water. There is no significant migration of PCBs off Site, based on the non-detection of aroclor 1242, the primary PCB aroclor of concern, and the one detection of aroclor 1248 at relatively low concentrations below a site-specific Sediment Quality Benchmark.
- Additional sediment sampling conducted in the vicinity of the storm sewer outfall has resulted in delineation of contamination and indicates significantly lower levels of PCBs than those detected in 1997. PCBs were not detected in any of the recent surficial sediment samples, which represent conditions in the biologically-active zone, and recent sampling of deeper subsurface sediments indicates that the extent of potentially Site-related contamination in sediments is limited in both extent and concentration.
- Hexcel is moving forward with the implementation of dual-phase extraction in the source areas, and removal of other on-site sources of contamination. These include the completion of surficial PCBs removal, the removal of the industrial sewer, and the installation of a subsurface sheet pile barrier around some source areas. Therefore, concentrations of compounds of concern on Site and, consequently, potential migration from the Site will decrease significantly with time.
- Potential remedial action would be invasive and would cause adverse impacts to ecological receptors. There are numerous other sources contributing PCBs to the Saddle River, as indicated by the recent and historical sediment quality data sets.

Therefore, the efficacy of potential remedial action would be limited, and the costs, including risk of harm to ecological receptors, would exceed the benefits.

This Report is divided into following sections:

- 1) Saddle River Stream Flow Conditions
- 2) Field Program
  - I) Surface Water Sampling Program
  - II) Sediment Sampling Program
- 3) Evaluation of Analytical Results
  - I) Hexcel Site
    - A) Surface Water Sampling Program
    - B) Sediment Sampling Program
  - II) Storm Sewer Outfall
    - A) Sediment Sampling Program
  - III) Data Deliverables
- 4) Conclusions and Recommendations

## 1. SADDLE RIVER STREAM FLOW CONDITIONS

This section discusses the stream flow conditions of the Saddle River prior to and during the sampling events. By letters dated 19 March 2003 and 19 May 2003, NJDEP required Hexcel to demonstrate that stream flow is relatively low at the time of surface water sampling. This condition was achieved in compliance with NJDEP's requirement and as described below. Copies of the NJDEP letters are included in Appendix A.

Haley & Aldrich conducted the surface water and sediment sampling program during a period of low stream flow conditions. The data from the U.S. Geological Survey (USGS) stream gage designated as the station for Saddle River at Lodi, NJ were used to measure stream flow. The USGS stream gage is located approximately 1,000 yards upstream of the Hexcel Site. Figure 3 shows the monthly mean stream flow data from July 1990 to August 2003. The data from July 1990 through September 2002 are published values. The data from October 2002 through August 2003 are provisional data downloaded from the USGS web site and are subject to revision.



The NJDEP's 19 May 2003 letter approved the sediment and surface water sampling in mid to late July, given confirmation of relatively low flow conditions. The long-term mean discharge for the month of July ( $71.8 \text{ ft}^3/\text{sec}$ ) is within 10 percent of the mean discharge for October of  $64.7 \text{ ft}^3/\text{sec}$ , the lowest monthly mean stream flow measured over USGS Water Years 1924-2001. The long-term monthly mean includes 2002 data for July but not October, because it is calculated from published values only.

As shown in Figure 3, the daily mean discharge on 31 July 2003, the date that Haley & Aldrich collected surface water samples, was  $63 \text{ ft}^3/\text{sec}$ , which is below the long-term (1924-2002) monthly mean stream flow for July. Furthermore, the stream flow on 31 July 2003 was the lowest daily mean discharge recorded for this station during the month of July 2003 and was well below the monthly mean discharge for July 2003 ( $110 \text{ ft}^3/\text{sec}$ ). The stream flows recorded in June and August 2003 were significantly higher, with the monthly mean values of as  $291 \text{ ft}^3/\text{sec}$  and  $149 \text{ ft}^3/\text{sec}$ , respectively. Therefore, Hexcel is confident that NJDEP will concur that stream flow conditions in the Saddle River were of sufficiently low flow during the July 2003 sampling event.

## 2. FIELD PROGRAM

This section discusses the SSWSP conducted for the two Areas of Concern (AOCs), namely, i) the Hexcel Site, and ii) the storm sewer outfall. The Saddle River is best described as an urban watershed that is disturbed with significant degradation of habitat quality. Haley & Aldrich personnel observed large quantities of waste debris in the river, including refrigerators, porcelain toilets, automobile axles, tires, concrete block foundations, bricks, cinder blocks, and other household appliances and automotive parts. Refuse and litter were also observed in the river and along the river bank. Photographs were taken to document river surface, river bottom, and surrounding conditions before and during sampling and are included in Appendix B.

### I. Surface Water Sampling Program

The purpose of the surface water sampling program was to determine whether surface water may have been impacted by contaminants potentially migrating from the Site. On 31 July 2003, Haley & Aldrich personnel collected surface water samples from seven (7) locations in the Saddle River, designated "HA-SED-SW-1" through "HA-SED-SW-7," as shown on Figure 4. The seven surface water sampling locations were approved by NJDEP in a letter dated 20 November 2001. The surface water samples were collected in conjunction with the proposed sediment samples at the Hexcel Site, in accordance with NJDEP Guidance.

The surface water samples were collected during low stream water levels to minimize dilution processes. Samples were collected from downstream to upstream locations, starting at proposed sampling location HA-SED-SW-1, prior to the collection of sediment samples to avoid incorporation of disturbed sediment. Surface water samples were collected close to the

bed of the river in shallow water near the river bank to minimize dilution, as requested by the NJDEP's 19 March 2003 letter. The depth to water at the time of sampling ranged from less than 1 foot to approximately 3.5 feet at sampling locations conducted along the river's edge. In one depositional area where sediment samples were collected (location HA-SED-15), the top of sediment extended above the water surface by approximately 2 inches. Due to the shallow nature of the Saddle River, grab samples were deemed to be appropriate at all sample locations. Dedicated sample jars were used. Sample locations were documented by taping off distances along the riverbank from fixed site features.

Seven surface water samples and one field duplicate (sample SW-600) were submitted to Severn Trent Laboratories (STL) in Edison, New Jersey (NJDEP Lab Certification #12028) for the following chemical analyses: PCBs, VO+10 including dichlorobenzenes and acetone, pH, and total hardness. One trip blank was analyzed for VO+10 including dichlorobenzenes and acetone. Haley & Aldrich field tested the surface water samples for dissolved oxygen utilizing a dissolved oxygen meter. Metals and base neutral organic compounds (BNs) are not considered to be compounds of concern in surface water, based on groundwater quality results for samples collected from monitoring wells along the Saddle River. In a letter dated 19 May 2003, NJDEP accepted Hexcel's proposal to omit the collection of surface water samples for priority pollutant metals and BNs (other than dichlorobenzenes). A copy of the 19 May 2003 letter from NJDEP is included in Appendix A.

Haley & Aldrich reviewed surface water quality data provided by Napp Technologies, Inc. (Napp), which is located adjacent to the Hexcel property to the south. The surface water samples were collected by Environmental Liability Management, Inc. (ELM) on behalf of Napp in March 2002. At one location adjacent to the Hexcel Site (ELM\_SW-6), a surface water sample and a field duplicate were collected; the analytical results for VOs are presented herein. Napp did not conduct PCB analyses on the surface water samples.

## II. Sediment Sampling Program

The purpose of the sediment sampling program was to delineate the extent of contaminants found in sediments that are also found at the Hexcel Site, and to distinguish potential Site impacts to the Saddle River from those impacts unrelated to the Site. In addition, the recent sediment sampling program was used to evaluate the results of a previous sediment sampling program. In October 1997, Hexcel conducted a sediment sampling program along the eastern bank of the Saddle River in the vicinity of the sewer outfall pipe to which the Hexcel storm sewer system is believed to be connected in addition to potential discharges from sources other than Hexcel.

On 30 and 31 July 2003, Haley & Aldrich personnel collected sediment samples at fifteen (15) stations. Seven of these stations, designated "HA-SED-SW-1" through "HA-SED-SW-7", were located upstream and adjacent to the Hexcel Site (Figure 4). The sediment sampling locations corresponded with the seven surface water sampling locations approved by NJDEP,

as discussed above. The remaining eight stations, designated "HA-SED-8" through "HA-SED-15", were located upstream and downstream from the storm sewer outfall (Figure 5), and were used to delineate the extent of contamination detected in October 1997.

The sampling program was conducted during a period of low stream water levels to expose depositional environments, as discussed in the previous section. At each AOC, downstream samples were collected first, followed by subsequent upstream samples. Each sampling station was located near the river bank in a location of minimal stream flow. Localized depositional areas were targeted as sampling locations but were limited in the Site vicinity. The location of the storm sewer outfall was documented using a GPS unit. Sample locations were documented by taping off distances along the riverbank from the storm sewer outfall and other fixed site features.

The sampling conditions of the Saddle River's sediment proved difficult. Significant gravels, cobbles, and hard materials were encountered at the river bottom. The large quantities of waste debris in the river contributed to the difficulty of the sampling conditions. As described above, Haley & Aldrich personnel observed refrigerators, porcelain toilets, automobile axles, tires, concrete block foundations, bricks, cinder blocks, and other household appliances and automotive parts. Refuse and litter were also observed in the river and along the river bank. Where possible, PVC was driven by hand as temporary casing to minimize influx of water and samples were collected using a stainless steel bucket auger. Hand coring devices and silver bullet samplers were unable to advance through the sediment with recovery. As we advised you during our telephone conversation on 4 August 2003, sediment samples at several locations were collected using a stainless steel spade due to the ineffectiveness of other sampling devices. This sampling device was most effective in advancing some borings to the desired sampling depth. Given the shallow slow-flowing waters, the samples are adequately representative of sediment conditions. Following the collection of each sample, the sampling device was decontaminated with Liquinox and distilled water.

Two sediment samples from each station were collected, with the exception of stations HA-SED-13 (three samples collected to a depth of 18 inches) and HA-SED-14 (four samples collected to a depth of 24 inches). The upper 6 inches at each location were sampled to evaluate potential ecological risks in the biotic zone. Deeper subsurface samples were collected to characterize historical discharges, if present, that may be overlain by more recent sediment deposits, and for vertical delineation. Hexcel proposed to collect a deeper sample from a depth of 12 to 18 inches at station HA-SED-12. However, due to the difficult sampling conditions caused by cobbles and hard materials at this location, Haley & Aldrich personnel were unable to recover a sediment sample below a depth of 12 inches.

In addition to the gravels, cobbles, and debris, coarse to fine sands were typically encountered at each station. One sample from station HA-SED-SW-7 was collected from native material (organic silt) at a depth of 6 to 12 inches from the top of sediment. The results of laboratory

particle size analysis confirmed our field observations. The gradation data are presented in Appendix C.

During the investigation activities in the storm sewer outfall area, Haley & Aldrich personnel observed a partially buried, 3-inch diameter metal pipe on the eastern bank of the river. A photograph of the pipe is included in Appendix B. The pipe ended approximately 4 feet from the river's edge directly to the east of sediment sampling station HA-SED-9 (Figure 5), and is located approximately 1,000 feet downstream of the Hexcel Site. Haley & Aldrich was unable to determine the origin of this pipe, which was oriented from east to west with the mouth pointing directly towards the river. The pipe may serve as a potential migration pathway from sources unrelated to the Hexcel Site to the Saddle River. Soils beneath the mouth of the pipe appeared dark and stained. Haley & Aldrich documented this pipe by taking photographs and collecting a surface (0 to 2 inches) soil sample (designated "PIPE") at the point of apparent discharge.

Thirty-three sediment samples collected at the two AOCs were submitted to STL in Edison, New Jersey for the following chemical analyses: PCBs; total organic carbon (TOC), and pH. In addition, fourteen sediment samples collected in the vicinity of the Hexcel Site were analyzed for VO+10 including dichlorobenzenes and acetone. The soil sample designated "PIPE" was analyzed for PCBs. Thirty sediment samples among both AOCs were submitted to Geotesting Services, Inc. in Totowa, New Jersey for particle size analysis by sieve testing.

Haley & Aldrich reviewed sediment quality data provided by Napp. The sediment samples were collected by ELM on behalf of Napp in March 2002. At one location adjacent to the Hexcel Site (ELM\_SED-6), one sediment sample and a field duplicate were collected and analyzed for PCBs; the results are presented herein.

### 3. EVALUATION OF ANALYTICAL RESULTS

#### I. Hexcel Site

##### A. Surface Water Analytical Results

The results of the surface water sampling program indicate that surface water quality in the Saddle River adjacent to the Hexcel Site has not been significantly impacted by the potential migration of compounds of concern from the Site. Only one compound found at the Hexcel Site, chlorobenzene, was detected in recent surface water samples at concentrations below New Jersey Surface Water Quality Standards (SWQS) and Federal Ambient Water Quality Criteria (AWQC). Figure 4 presents analytical results for compounds detected in surface water samples. Recent surface water quality data are also summarized in Table I. Historical surface water quality data are provided in Appendix D (Table D-1) for informational purposes.



#### Volatile Organics

The majority of VOs were not detected in surface water samples, and concentrations of detected VOs found at the Site do not exceed SWQSs. In the surface water samples collected by Haley & Aldrich on 31 July 2003, only two VOs (chlorobenzene and tetrachloroethene) were detected, both at relatively low concentrations (Table I and Figure 4). Only one of these compounds, chlorobenzene, is also found at the Site. The detections of chlorobenzene are below the SWQS and are limited to the vicinity of the source and downstream locations (HA-SED-SW-1 through HA-SED-SW-3).

Tetrachloroethene (PCE) results adjacent to source areas ranged from non-detect to low concentrations below the SWQS. PCE was detected at concentrations slightly above the SWQS upstream of the Site and the source areas. Station HA-SED-SW-3, which was located across from monitoring well MW-8 on Site, did not result in any detections of PCE in surface water samples; of all on-site wells along the Saddle River, MW-8 is closest to the source areas. Therefore, the presence of PCE is attributed to upstream sources other than the Hexcel Site.

Haley & Aldrich reviewed the results for surface water samples collected by ELM on behalf of Napp. One VO, cis-1,2-dichloroethene (cis-1,2-DCE), was detected at a low concentration in one of two duplicate surface water samples collected by ELM in March 2003. No SWQS or AWQC currently exists for cis-1,2-DCE; cis-1,2-DCE was not detected by Hexcel. The low concentration detected by Napp is not considered likely to pose harm to potential ecological receptors.

Therefore, VOs are not considered to be compounds of concern in surface water, and no further assessment of VOs in surface water is necessary.

#### Polychlorinated Biphenyls

PCBs were not detected in any of the seven surface water samples collected adjacent to the Hexcel Site (Table I and Figure 4). PCBs do not appear to be migrating from Site soils or groundwater to surface water in the Saddle River adjacent to the Hexcel Site. Therefore, PCBs are not considered to be compounds of concern in surface water, and no further assessment of PCBs in surface water is necessary.

#### Other Parameters

Dissolved oxygen (DO) levels did not exceed the SWQS in any of the five tested surface water samples, including upstream samples SW-6 and SW-7 (Table I). The measured pH values were within the range of SWQS values (Table I).

Based on these results, no further assessment of potential impacts to surface water quality in the Saddle River from the Hexcel Site is necessary for the following reasons:

- Surface water quality in the Saddle River adjacent to the Site does not appear to have been significantly impacted by the potential migration of compounds of concern from the Site.
- PCBs were not detected in any of the seven surface water samples collected along the Site.
- Only one site-related VO, chlorobenzene, was detected at low concentrations below the New Jersey Surface Water Quality Standard.
- Other parameters, including dissolved oxygen and pH, were within acceptable ranges.

#### B. Sediment Analytical Results

The results of the sediment sampling program indicate that sediments in the Saddle River adjacent to the Hexcel Site appear to be minimally impacted by the potential migration of compounds of concern from the Site. Figure 4 presents analytical results for compounds detected in sediment samples collected alongside the Hexcel Site. Recent sediment quality data at the Hexcel Site are summarized in Table II for VOs and Table III for PCBs. Historical sediment quality data are provided in Appendix Table D-2 (VOs) and Appendix Table D-3 (PCBs) for informational purposes.

##### Volatile Organics

A limited number of VOs were detected in recent sediment samples collected adjacent to the Hexcel Site (Table II and Figure 4). Detected VOs include benzene, chlorobenzene, dichlorobenzenes, ethylbenzene, and toluene. These results corroborate the results of Haley & Aldrich's 1998 river bed investigation. Cis-1,2-DCE was detected in one sediment sample collected upstream from the Site (at location HA-SED-SW-7 from 6 to 12 inches) and hence is considered to be unrelated to the Site.

NJDEP sediment quality standards have not been promulgated. NJDEP Freshwater Sediment Screening Guidelines (Province of Ontario Lowest Effects Levels) are not available for VOs. Detected results were compared with USEPA screening-level Sediment Quality Benchmarks (SQB). Two different USEPA SQB, both calculated based on equilibrium partitioning theory, were used for comparison purposes. Screening-level criteria are conservative and are not intended to be used as action levels. An exceedence of a screening value indicates the potential for but not

necessarily the presence of an ecological response. SQBs were adjusted for site-specific organic carbon content for each sample in which VOs were detected (Table II).

Exceedences of SQB are limited in extent to the vicinity of the source area. The highest VO levels were detected at sediment station HA-SED-SW-3, adjacent to monitoring well MW-8, which has historically exhibited elevated VO concentrations in groundwater (Table II). A river bed investigation conducted by Haley & Aldrich in 1998 involved conducted of nine test borings to a depth of approximately 6.5 to 7.0 feet below the river bed in the vicinity of station HA-SED-SW-3 (Figure 4). VOs were not detected in the sediment samples collected furthest from the Site (Appendix Table D-2).

Lower levels of VOs were detected primarily in surficial (0 to 6 inches) sediments at stations HA-SED-SW-1, HA-SED-SW-2 and HA-SED-SW-4 (Table II). VO results for sediment samples collected upstream of source areas (stations HA-SED-SW-5 through HA-SED-SW-7) did not exceed SQB (Table II). Therefore, the extent of VO contamination in sediments appears to be limited, both horizontally and vertically.

Based on these results, Hexcel proposes no further action with respect to VOs in sediments at the Hexcel Site for the following reasons:

- The extent of VO contamination in sediments is limited in extent and concentration.
- Based on the surface water quality data presented above, VOs in sediments are not discernibly migrating to surface water in the Saddle River.
- VOs generally do not adsorb strongly to sediments and volatilize readily into the atmosphere; as a result, VOs are not typically considered to be persistent in the environment. VOs do not readily bioaccumulate and do not tend to magnify in the food chain. Therefore, source removal on Site will result in decreasing VO concentrations in sediments over time.
- Hexcel is moving forward with the implementation of dual-phase extraction in the source areas. Therefore, concentrations of VOs on Site and, consequently, potential migration from the Site will decrease significantly with time.

#### Polychlorinated Biphenyls

PCBs were not detected in the majority of the sediment samples collected in the Saddle River adjacent to the Hexcel Site (Table III and Figure 4). PCBs were detected in only two of fourteen sediment samples, and only one sample showed an aroclor (1248) that is a Site compound of concern. Aroclor 1242, the primary PCB aroclor of concern at the Hexcel Site, was not detected in any of the fourteen sediment samples collected along

the Site. Therefore, Hexcel concludes that there are no complete migration pathways for PCBs from subsurface Site soils to the Saddle River.

Aroclor 1248, which has been detected in limited near surface soils on the Hexcel Site, was detected in a surficial (0 to 6 inches) sediment sample collected at station HA-SED-SW-1 (Table III). Although the Aroclor 1248 level in sample SED-1-0-6 (0.42 mg/kg) exceeds the NJDEP Freshwater Sediment Screening Guideline of 0.030 mg/kg, the detected Aroclor level is below the USEPA SQB (0.93 mg/kg) and Province of Ontario's Severe Effects Level (1.39 mg/kg), both adjusted for sample-specific organic carbon content, indicating that a site-specific screening value has not been exceeded, and that a severe adverse effect on benthic organisms is unlikely. The NJDEP screening value is not adjusted for site-specific organic carbon content.

Aroclor 1254, which is not a compound of concern at the Hexcel Site, was detected at station HA-SED-SW-5 upstream of source areas and is attributed to upstream sources unrelated to the Hexcel Site (Table III). The Saddle River has a long history of industrial use and numerous potential upstream sources of contamination. Historical sediment quality data for total PCBs collected by the U.S. Army Corps of Engineers demonstrate the ubiquitous presence of PCBs in the Saddle River, both upstream and downstream from the Site (Appendix Table D-5).

Based on these results, Hexcel proposes no further action with respect to PCBs in sediments at the Hexcel Site for the following reasons:

- Aroclor 1242, the primary PCB aroclor of concern, was not detected in any of the fourteen sediment samples collected along the Site.
- The extent of Aroclor 1248 detections adjacent to the Site is limited to one sediment sample with relatively low concentrations below a site-specific Sediment Quality Benchmark.
- There is no significant migration of PCBs off Site, and no adverse impacts from site-related PCBs are anticipated in the Saddle River.

## II. Storm Sewer Outfall

### C. Sediment Analytical Results

Additional sediment sampling conducted in the vicinity of the storm sewer outfall has resulted in improved delineation and indicates significantly lower levels of PCBs than those detected in 1997. PCBs were not detected in any of the surficial (0 to 6 inches) sediment samples collected by Haley & Aldrich on 30 July 2003. Furthermore, PCBs were not detected at stations HA-SED-9, HA-SED-10, or HA-SED-12, which were

conducted to evaluate the highest PCB level previously detected at location S1. PCBs are considered to be the only Site-related compound of concern near the storm sewer outfall. Figure 5 presents the analytical results for compounds detected in sediment samples collected near the storm sewer outfall. Recent sediment quality data at the storm sewer outfall are also summarized in Table IV. Historical sediment quality data, including October 1997 results, are provided in Appendix Table D-4 for informational purposes.

Based on the recent sediment quality results, the PCB contamination detected in the vicinity of the outfall is limited in extent (Figure 5). Aroclor 1242, the primary PCB aroclor of concern at the Hexcel Site, the industrial sewer, and possibly the storm sewer, was detected in only three of twenty samples, at stations HA-SED-8 (6 to 12 inches), HA-SED-13 (6 to 12 inches), and HA-SED-14 (18 to 24 inches). These three locations follow the eastern bank of the river directly downstream of the outfall and can be used to delineate the extent of aroclor 1242 contamination in sediments.

A NJDEP Freshwater Sediment Screening Guideline is not available for aroclor 1242 but exists for total PCBs. The detected results of aroclor 1242 exceed the NJDEP Sediment Screening Guideline for total PCBs (0.070 mg/kg), which is not adjusted for site-specific organic carbon content, as well as the USEPA SQB for aroclor 1242, adjusted for site-specific organic carbon content (Table IV). However, aroclor 1242 results are below the Province of Ontario's Severe Effects Level, adjusted for site-specific organic carbon content, indicating that a severe adverse effect on benthic organisms is unlikely.

In addition, a number of different aroclors unrelated to the Hexcel Site were detected during the July 2003 sampling event. Other PCB aroclors detected in the vicinity of the storm sewer outfall include aroclor 1248 (locations HA-SED-14 and HA-SED-15, both from 6-12 inches), aroclor 1232 (location HA-SED-13 from 12-18 inches), and aroclor 1262 (location HA-SED-11 from 6-12 inches). Aroclor 1248 has been detected in limited near surface soils on the Hexcel Site but was not detected in the industrial sewer and is not considered to be a Site compound of concern in the storm sewer. Aroclors 1232 and 1262 have not been detected in association with the Hexcel Site and are not considered to be compounds of concern. Therefore, the detection of these aroclors is considered to be unrelated to the Site and is attributed to other sources.

The results of the surface (0 to 2 inches) soil sample collected beneath the 3-inch diameter metal pipe of unknown source adjacent to station HA-SED-9 are presented in Table V and Figure 5. Two PCB aroclors, 1254 and 1260, were detected in the soil sample collected beneath the mouth of the pipe at a concentration of 0.41 mg/kg and 0.29 mg/kg, respectively. This further confirms contributions from sources unrelated to Hexcel.

These findings, combined with observations of large quantities of waste debris and refuse, suggest that there are numerous sources of various aroclors contributing to PCB levels in the Saddle River in the Site vicinity. The contributions of PCBs to the Saddle River from other upstream and downstream sources are evident in the U.S. Army Corps of Engineers historical sediment quality data set for Saddle River summarized in Appendix Table D-5.

Based on these results, Hexcel proposes no further action with respect to PCBs in sediments in the vicinity of the storm sewer outfall for the following reasons:

- The extent of sediment contamination at this AOC is considered to be adequately delineated.
- PCBs were not detected in any of the eight recent surficial sediment samples, which represent conditions in the biologically-active zone.
- Recent sampling of deeper subsurface sediments indicates significantly lower levels of PCBs than those detected in 1997.
- The extent of PCB contamination in subsurface sediments that is potentially related to the Site is limited in extent and concentration.
- Potential remedial action would be invasive and would cause adverse impacts to ecological receptors. There are numerous other sources contributing PCBs to the Saddle River, as indicated by the recent and historical sediment quality data sets. Therefore, the efficacy of potential remedial action would be limited, and the costs, including risk of harm to ecological receptors, would exceed the benefits.

### III. Data Deliverables

Laboratory data summary sheets for the July 2003 sediment and surface water testing are included as Appendix E. Electronic Data Deliverables, in NJDEP-approved format, are provided as Appendix E (NJDEP-Copy only). The current version of the Electronic Data Submittal Application (EDSA Version 5.00.0001) was used to check the electronic data submission. The computer screen printout indicating that the files passed the EDSA check is also enclosed as Appendix E. Laboratory QA/QC results package is provided as separately bound volume (NJDEP-Copy only; STL Job Numbers L719, L720, and L759).

### 4. CONCLUSIONS AND RECOMMENDATIONS

In summary, our conclusions and recommendations based on the results of this sampling program are as follows:

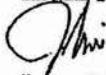


- Surface water quality in the Saddle River adjacent to the Site has not been adversely impacted by the potential migration of compounds of concern from the Site. Polychlorinated biphenyls (PCBs) were not detected in any of the surface water samples collected, and only one site-related volatile organic (VO), chlorobenzene, was detected at low concentrations below the New Jersey Surface Water Quality Standard.
- The extent of sediment contamination potentially related to the Site has been delineated.
- Detected concentrations of compounds of concern in sediment are limited in extent and concentration, and are not anticipated to cause adverse impacts to potential ecological receptors.
- Sediments in the Saddle River adjacent to the Hexcel Site are minimally impacted by the potential migration of compounds of concern from the Site. The extent of VO contamination in sediments is limited in extent and concentration, and VOs in sediments are not discernibly migrating to surface water. There is no significant migration of PCBs off Site, based on the non-detection of aroclor 1242, the primary PCB aroclor of concern, and the one detection of aroclor 1248 at relatively low concentrations below a site-specific Sediment Quality Benchmark.
- Additional sediment sampling conducted in the vicinity of the storm sewer outfall has resulted in delineation of contamination and indicates significantly lower levels of PCBs than those detected in 1997. PCBs were not detected in any of the recent surficial sediment samples, which represent conditions in the biologically-active zone, and recent sampling of deeper subsurface sediments indicates that the extent of potentially Site-related contamination in sediments is limited in both extent and concentration.
- Hexcel is moving forward with the implementation of dual-phase extraction in the source areas, and removal of other on-site sources of contamination. These include the completion of surficial PCBs removal, the removal of the industrial sewer, and the installation of a subsurface sheet pile barrier around some source areas. Therefore, concentrations of compounds of concern on Site and, consequently, potential migration from the Site will decrease significantly with time.
- Potential remedial action would be invasive and would cause adverse impacts to ecological receptors. There are numerous other sources contributing PCBs to the Saddle River, as indicated by the recent and historical sediment quality data sets. Therefore, the efficacy of potential remedial action would be limited, and the costs, including risk of harm to ecological receptors, would exceed the benefits.

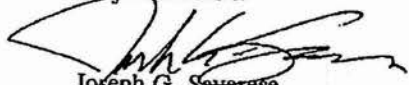
New Jersey Department of Environmental Protection  
08 October 2003  
Page 15

Please do not hesitate to contact us if you have any questions regarding this Report.

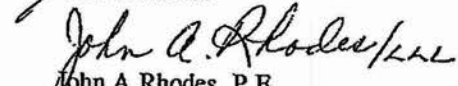
Sincerely yours,  
HALEY & ALDRICH, INC.



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## REFERENCES

1. Environmental Liability Management, Inc., *Ecological Assessment Report for the Property Located at 199 Main Street, Lodi, NJ, ISRA Case No. 95400*, Prepared for Purdue Pharma Technologies, December 30, 2002.
2. Jones, D.S. et al, *Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Sediment-Associated Biota: 1997 Revision*, Oak Ridge National Laboratory, November 1997.
3. New Jersey Department of Environmental Protection, *Guidance for Sediment Quality Evaluations*, November 1998.

## **List of Tables, Figures and Appendices**

### **Tables**

- Table I – Summary of Surface Water Quality Data
- Table II – Summary of Sediment Quality Data: Volatile Organics at Hexcel Site
- Table III – Summary of Sediment Quality Data: Polychlorinated Biphenyls at Hexcel Site
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- Table V – Summary of Soil Quality Data: Polychlorinated Biphenyls at Pipe

### **Figures**

- Figure 1 – Aerial Photograph and July 2003 Sample Locations: Saddle River
- Figure 2 – Site Plan
- Figure 3 – U.S. Geological Survey Stream Flow Data: Saddle River at Lodi, NJ
- Figure 4 – Sediment and Surface Water Sample Locations and Detected Results (July 2003): Hexcel Site
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### **Appendices**

- Appendix A – Copy of NJDEP's letters dated 19 March 2003 and 19 May 2003
- Appendix B – Photographs
- Appendix C – Sediment Particle Size Analysis Results
- Appendix D – Historical Data Tables
  - Table D-1 – Historical Surface Water Quality Data
  - Table D-2 – Historical Sediment Quality Data: Volatile Organics at Hexcel Site
  - Table D-3 – Historical Sediment Quality Data: Polychlorinated Biphenyls at Hexcel Site
  - Table D-4 – Historical Sediment Quality Data: Polychlorinated Biphenyls at Storm Sewer Outfall
  - Table D-5 – Historical Sediment Quality Data: Polychlorinated Biphenyls in the Saddle River
- Appendix E – Laboratory Data Summary Sheets, Electronic Data Deliverable Diskette and EDSA Check

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11 IN THE UNITED STATES BANKRUPTCY COURT  
12 FOR THE NORTHERN DISTRICT OF CALIFORNIA  
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14

15 In re:

16 HEXCEL CORPORATION, a Delaware  
17 corporation,

18 Debtor.

19  
20 HEXCEL CORPORATION, a Delaware  
corporation,

21 Plaintiff,

22 vs.

23 NEW JERSEY DEPARTMENT OF  
24 ENVIRONMENTAL PROTECTION,  
UNITED STATES ENVIRONMENTAL  
25 PROTECTION AGENCY,

26 Defendants.  
27

Case No. 93-48535 T

Chapter 11

A.P. No. 04-4246

Date: February 17, 2005

Time: 2:00 p.m.

Place: 1300 Clay Street

Courtroom 201

Oakland, CA

Judge: Hon. Leslie Tchaikovsky

28 CERTIFICATE OF SERVICE BY FIRST CLASS MAIL

1 I, the undersigned, state that I am employed in the City and County of San Francisco, State of  
2 California, in the office of a member of the bar of this Court, at whose direction the service was  
3 made; that I am over the age of eighteen years and not a party to the within action; that my business  
4 address is 44 Montgomery Street, Suite 2900, San Francisco, California 94104-4789; that on the date  
5 set out below, I served a copy of the following:

6 **PLAINTIFF HEXCEL CORPORATION'S OPPOSITION**  
7 **TO THE MOTION FOR SUMMARY JUDGMENT OF THE**  
8 **NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION**

9 **DECLARATION OF COUNSEL**

10 on each party listed below by placing such a copy, enclosed in a sealed envelope with first class  
11 postage thereon affixed, in a United States Postal Service mailbox at San Francisco, California,  
12 addressed to each party listed below.

13 I declare under penalty of perjury that the foregoing is true and correct. Executed at San  
14 Francisco, California on January 18, 2005.

15 /s/ Pamela A. Joakimson

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